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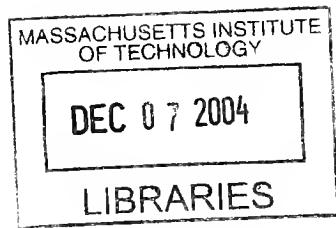
Mandated Disclosure, Stock Returns, and the 1964 Securities Acts Amendments[*]

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Abstract

We analyze the last major imposition of mandatory disclosure requirements in US equity markets. The 1964 Securities Acts Amendments extended the requirements to provide audited financial reports, informative proxies, and reports on insider holdings and trades to large firms traded over-the-counter (OTC). We find that firms newly required to make all these types of disclosure had a statistically significant abnormal excess return of about 10% in the year and a half that the law was debated and passed relative to a comparison group of unaffected NYSE/AMEX firms and after adjustment for the standard four-factor model. Furthermore, during this period, these OTC firms outperformed OTC firms for which the proxy and insider trading rules were the only new forms of mandated disclosures. Small OTC firms, which were generally unaffected by the new rules, had the lowest returns. In addition, a firm-level event study analysis demonstrates that complying OTC firms had abnormal excess returns of about 4% in the weeks immediately surrounding the announcement that they would comply with the new disclosure requirements. These results support the hypothesis that mandatory disclosure laws can be an effective means for curtailing diversion by insiders. However, the precise welfare consequences are unknown because we cannot determine how much of the gains to shareholders were a transfer from the insiders of these same companies.

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1   Introduction

Since the passage of the Securities Act of 1933 and the Securities Exchange Act of 1934, the federal government has actively regulated US equity markets. The centerpiece of these efforts is the mandated disclosure of financial information by covered firms. Proponents of securities market regulations cite cross-country studies that find that higher levels of investor protection, such as mandatory disclosure requirements, are associated with less concentrated ownership, larger equity markets, and higher valuations of equities (La Porta, Lopez-de Silanes and Shleifer (1999), La Porta, Lopez-de Silanes, Shleifer and Vishny (1997), and La Porta, Lopez-de Silanes, Shleifer and Vishny (2002)).[1] These empirical relationships suggest that mandatory disclosure laws may provide access to equity on more favorable terms for entrepreneurs. Furthermore, given the link between financial development and growth (Rajan and Zingales (1998) and Castro, Clementi and MacDonald (2004)), it is possible that these laws lead to higher standards of living.

Previous research provides mixed evidence on the consequences of mandatory disclosure laws. Theoretical models suggest that mandatory disclosure can be beneficial when the costs of writing or enforcing contracts that bind managers to maximize shareholder value are prohibitively high. Ultimately, whether these costs are prohibitive is an empirical question. Although the first empirical evaluations of mandatory disclosure laws were published four decades ago (Stigler (1964), Friend and Herman (1964), and Robbins and Werner (1964)), the extensive subsequent literature has failed to reach a consensus on their consequences (Coffee (1984), Healy and Palepu (2001)). Moreover, the possibility of omitted variables bias in cross-country studies of the consequences of investor protection laws is a potentially important concern in interpreting the results from that approach.

More conclusive evidence on the consequences of mandatory disclosure laws would inform current policy controversies. For example, such evidence could help to evaluate the validity of the increasing calls by legal scholars to significantly modify or repeal US mandatory disclosure requirements, especially the Securities Act of 1933 (Mahoney (1997), Romano (1998), Palmiter (1999)).[2] Furthermore, additional evidence on the effects of mandatory disclosure laws would be useful for countries, especially developing ones, that are currently choosing how to regulate their public equity markets.

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[1] Also see La Porta, Lopez-de Silanes and Shleifer (2002) and Glaeser, Johnson and Shleifer (2001).

[2] Romano (1998) recommends the repeal of the 1933 and 1934 Acts and that they be replaced by a system of competing state regulations. She writes, "The mandatory federal securities regime has been in place for over sixty years, but the theoretical support for it is thin, and there is no empirical evidence indicating that it is effective in achieving its stated objectives. In fact, there is a developing literature pointing in the opposite direction. At a minimum, this literature suggests that the securities status quo should no longer be privileged, and that it should instead be opened up to market forces by means of competitive federalism" (p. 2428).

This paper presents new evidence on the impacts of mandatory disclosure laws by analyzing the consequences of the imposition of the 1964 Securities Acts Amendments. The 1964 Amendments were the last major mandatory disclosure regulations applied to US equity markets. They extended the disclosure requirements that have applied to firms traded on exchanges (e.g., the New York and American Stock Exchanges) since 1934 to firms traded Over the Counter (OTC) that exceeded asset and shareholder floors. We test whether the introduction of these requirements generated positive abnormal excess stock returns for OTC firms relative to unaffected NYSE/AMEX firms. We also test whether the OTC firms that were subject to these requirements outperformed the OTC firms that escaped them due to their small size.

The 1964 Amendments provide a compelling setting for evaluating the consequences of mandatory disclosure regulations for at last two reasons. First, this legislation did not affect all firms equally. One category of OTC firms was entirely free of all mandatory disclosure requirements before 1964, but the 1964 Amendments required them to: (1) register with the SEC; (2) provide regular updates on their financial position, such as audited balance sheets and income statements; (3) issue detailed proxy statements to shareholders, and (4) report on insider holdings and trades. A second set of OTC firms was already fulfilling (1) and (2) and the 1964 legislation required these firms to begin complying with (3) and (4). Finally, small OTC firms below the asset or shareholder floors would only be affected by the 1964 Amendments if they grew above these size cutoffs. In contrast, NYSE and AMEX firms were entirely unaffected by the law because they had been subject to all four of the mandatory disclosure requirements.

Second, the timing of the debate, passage, and initial enforcement of the Amendments generate potentially informative inter-temporal variation in the expected effects of the law. Because equity markets are forward looking, the period from the beginning of 1963, when efforts to extend mandatory disclosure were initiated until the legislation became law at the end of August of 1964 is a crucial one. If shareholders valued the disclosure requirements, we expect positive abnormal returns in this period (which we label Period 1.) The second period begins with the end of the first period and runs through November 15, 1965, which is when almost all affected firms were required to begin complying with the new disclosure requirements. Here, we interpret a test for abnormal excess returns as informative about whether the market had the correct expectations about the fraction of firms that would comply with the law and the revealed financial position of these firms. The third period runs from November 15, 1965 through the end of 1966 and during this period virtually no new information about the law or which firms would comply with its requirements was revealed. Evidence of abnormal excess returns in this period would undermine the validity of our approach in all periods.

One reason that the 1964 Amendments have not been studied widely is that electronic data on OTC firms is unavailable in this period. We created the equivalent of the Center for Research in Security Prices (CRSP) data set for a large sample of OTC firms from 1963 through 1966. We combined OTC stock price listings in printed versions of *Barron's* newspapers and numerous other sources. The resulting data file contains information on share prices, dividends, stock splits, mergers, name changes, liquidations, accounting and financial information, and SEC filing status of 1,182 OTC firms.

Our primary finding is that affected OTC firms had positive abnormal excess returns over a size-matched group of NYSE/AMEX firms in Period 1 based on a standard four-factor model of returns (Fama and French (1993), Carhart (1997)). Specifically, the group of firms that were newly required to begin complying with all four forms of mandatory disclosure had a statistically significant cumulative abnormal excess return of about 10% in the period culminating with the law's passage, suggesting that shareholders valued the disclosure requirements of the 1964 Amendments. The relative performance of the various groups of OTC firms lead to a similar conclusion.

The Period 2 results indicate that the OTC group newly affected by all four forms of mandatory disclosure also had positive abnormal excess returns during this period. This suggests that the market underestimated the fraction of affected firms that would comply with the disclosure requirements and/or the revealed financial position of these firms. A firm-level event study for Period 2 of the weeks surrounding OTC firms' announcements that they would comply with the disclosure requirements reveals that the shares of companies that registered with the SEC were bid-up by 3-4% upon the public release of this news. Further, these gains appear larger for a subset of companies for which ex-ante diversion was likely higher (proxied by bid-ask spreads).

In Period 3, we cannot reject the null hypothesis of zero abnormal excess returns for the OTC firms. This provides reassuring evidence on the validity of our research design and lends credibility to our claim that the 1964 Amendments caused the Period 1 and 2 abnormal returns.

Overall, our results suggest that the benefits of the 1964 Amendments substantially outweighed the cost of complying with this law as measured by stock returns. The implication is that the affected firms were not managed to maximize shareholder value prior to 1964. We cannot determine whether this was because managers made negative net present value "empire building" acquisitions, lavished excessive salaries or perks on themselves, engaged in insider trading that reduced the liquidity of the firm's shares, or some other mechanism. Regardless of the exact channel, these findings are consistent with the notion that the market expected the Amendments to more narrowly focus managers on the maximization of shareholder value. This finding is a necessary condition for a positive welfare effect, but it is not sufficient, because we cannot rule out the possibility that

managers lost an amount equal to that gained by shareholders.

Our approach overcomes many of the problems that have plagued previous empirical research on mandatory disclosure laws. First, our econometric approach is more robust than those used in the previous literature due to the unique opportunity afforded by the availability of the unaffected NYSE/AMEX firms and differentially affected OTC groups. In contrast, much of the previous literature relies on simple before and after comparisons. For example, a number of the evaluations of the 1933 Securities Act and 1934 Securities Exchange Acts assume that these laws are the only difference in the investment environment in the periods before and after their passage (Stigler (1964), Friend and Herman (1964), Robbins and Werner (1964), Jarrell (1981)). This assumption seems especially questionable in the midst of the Great Depression.[3]

Second, the 1964 Amendments constitute a major change in disclosure requirements that affected a substantial number of large firms.[4] In contrast, Benston (1973) and Lo (2003) examine legislation that requires the reporting of a single piece of accounting information (i.e., sales and executive compensation disclosure requirements, respectively). Although Bushee and Leuz (2005) examine the imposition of the same set of disclosure requirements as those in the 1964 Amendments, the legislation they examine took effect in 1999 and applied to the small companies traded on the OTC Bulletin Board. These companies had a mean market capitalization of roughly \$8 million (1999\$), while the firms that were newly required to begin complying with all four forms of mandatory disclosure under the 1964 legislation had a mean market capitalization of approximately \$104 million (1999\$).

In the next section, we describe prior theoretical views on the value of mandatory disclosure and briefly review a model that helps frame our empirical analysis. In section 3, we provide some historical background on disclosure regulation in U.S. equity markets and explain in more detail why the 1964 Amendments provide a compelling environment to study the effects of mandatory disclosure laws. Sections 4 and 5 describe our data and our empirical methodology, respectively. The empirical results are presented in Section 6 and interpreted in Section 7. Section 8 concludes.

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[3] Chow (1983) and Simon (1989) study the 1933 and 1934 Acts using variation in how significantly the Acts affected firms of different types. That is, they look at the effects of the laws on treatment and control groups. Chow (1983) found that the 1933 Act lowered shareholder value, but the generality of his findings are limited by the paper's small sample size. Simon (1989) found that investor forecast errors (the dispersion of abnormal returns) were lower following the 1933 Securities Act. Her study only addresses newly issued securities.

[4] To our knowledge, Ferrell (2004) is the only other empirical analysis of the 1964 Securities Acts Amendments. Ferrell (2004) finds evidence on stock returns that is consistent with our findings, but the paper's focus is on the law's effect on volatility and correlation between individual firms and the overall market (synchronicity). This paper is discussed further in the interpretation section.

2 Theoretical Perspectives on Disclosure Regulation

Here, we briefly review the broad arguments in favor of and against mandatory disclosure requirements in securities markets.[5] We also review Shleifer and Wolfenzon's (2002) model of financial markets when insiders can divert firm resources. This model provides a framework to interpret our empirical results.

2.1 Theoretical Background

One traditional view of securities market regulation, often attributed to Stigler (1964) and Coase (1960), is that government intervention is at best ineffective and, at worst, damaging. The basis of this view is that private contracts, combined with the possibility of litigation between shareholders on the one side and managers, underwriters, auditors, and analysts on the other, is a cost effective way to achieve efficient disclosure. This private enforcement will be especially successful in settings with repeated interactions where agents with superior information are concerned about their reputations.

These views imply that a firm's failure to provide some information must be due to the high costs of provision, lack of value relevance, or valid concerns that competitors may benefit from its release. In this setting, mandatory disclosure regulations are either inconsequential or cause firms to release an inefficiently large amount of information.

An alternative view posits that prohibitively high costs of writing and enforcing complete contracts make mandatory disclosure regulations welfare enhancing. There are at least three reasons that regulations may be preferable to an exclusive reliance on private contracts. First, the costs of filing a lawsuit may introduce a free-rider problem among shareholders. In contrast, a regulator does not face these coordination problems. Second, regulations that mandate increased provision of information may be less vulnerable to subversion of justice than litigation (see Glaeser and Shleifer (2003)). Third, regulators' exclusive focus on securities cases may make them more effective than judges or juries at detecting fraud.

2.2 Conceptual Framework

The starting point of Shleifer and Wolfenzon's (2002) model of financial markets is that private contracts cannot set the expected penalties for diversion of firm profits by insiders high enough to

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[5] See Verrecchia (2001) for a review of the theoretical financial disclosure literatures in accounting, economics, and finance and Easterbrook and Fischel (1984) for a discussion of the legal scholarship's evidence on mandatory disclosure.

deter all diversion. We view diversion as any activity that does not maximize shareholder value, including expropriation of the cash flow for insiders' personal use, empire building (e.g., negative net present value investments that increase insiders' utility), and insider trading (which reduces liquidity and thus the value of equity).

Shleifer and Wolfenzon (2002) consider an entrepreneur who needs outside funding to bring her ideas to market. In exchange for these investments, she promises the outside shareholders a fraction of the future cash flow. The entrepreneur retains control of the firm, but she cannot credibly commit to zero diversion before paying out dividends.

The price that outside shareholders will pay for a given fraction of shares depends on their expectation of the degree of diversion (which depends on the magnitude of the contracting problem). Outsiders invest contingent upon an expected return at least as great as on alternative investments. In equilibrium, entrepreneurs divert firm resources and outside shareholders receive the market return on their investment. The key insight is that stock *returns* do not depend on the level of diversion, but stock *prices* do.

In this setting, consider the introduction of a regulatory policy that increases the expected penalties for diversion, either by increasing the probability of detection or raising the penalty. This policy will reduce the equilibrium level of diversion and, in turn, affect insiders' total payoff and firms' share prices. Consequently, such a policy will have distributional effects and may also impact welfare. These effects will differ for firms organized before and after the policy's introduction.

Consider firms that sold shares to the public before the policy was in force. The introduction of the policy increases the expected penalties for diversion. This lowers the equilibrium amount of diversion by entrepreneurs, which increases expected dividend payments to shareholders. This causes a one-time increase in the value of these firms and abnormally high stock returns during the period of this increase. However, after this jump in the stock price, the return to holding shares in the firm will again equal the market return.

The increased stock price does *not* necessarily indicate an increase in welfare. Social welfare is unaffected when the abnormal returns are solely due to a transfer of a fixed set of resources from one party (the entrepreneur) to another (outside investors). However, when diversion is costly (e.g., if the total cost of a lavish office exceeds the entrepreneur's private valuation), the reduced diversion will generate welfare improvements.

Our paper tests whether the introduction of the 1964 Securities Acts Amendments led to abnormal stock returns for firms that existed before the legislation was seriously considered. The basis for this test is the notion that the 1964 Amendments decreased the expected benefit of diversion for insiders by increasing the expected penalties. A rejection of the null of zero abnormal stock returns

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for affected firms would suggest that the information revelation induced by the law was valued by outside shareholders. Further, a positive effect would be consistent with a reduction in diversion, but this possibility cannot be tested directly because measures of diversion are unavailable. Finally, in the context of the model, a finding of positive abnormal returns can be interpreted as a necessary but not sufficient condition that the 1964 Amendments increased welfare.

Returning to the Shleifer and Wolfenzon (2002) model, consider the case of firms that sell shares to the public once the regulatory policy is in place. Shleifer and Wolfenzon (2002) show that the higher expected penalties for diversion affect entrepreneurs' incentives so that in equilibrium there is less diversion and a more efficient allocation of resources across entrepreneurs. This theoretical finding highlights that the potential welfare gains from mandatory disclosure laws extend beyond any gains associated with the set of firms that were established before such laws were in force. However, an empirical examination of this prediction is beyond the scope of our paper.

3   Background on Federal Disclosure Regulations and a New Research Design

Our empirical analysis examines the impact of the 1964 Securities Acts Amendments on the stock returns of affected firms. This section provides a brief history of securities laws before the 1964 Amendments and how the structure of the legislation and the timing of its passage and implementation provide a compelling research design to test for the effects of mandatory disclosure laws.

3.1   Federal Regulation of Securities Markets Before 1964

Prior to 1933, there was little federal regulation of securities markets.[6] The 1933 Securities Act and the 1934 Securities Exchange Act marked a revolutionary foray into the regulation of securities markets by the federal government. These Acts created four mandatory disclosure requirements.

Here, we explain these four mandatory disclosure requirements and detail which categories of firms were required to comply with each of them. Specifically, they are:

1. All firms that made a new or secondary offering were required to file a registration statement with the SEC and send a prospectus to purchasers. The documents include a "Schedule A" that lists detailed financial information (including at least three years of balance sheet and

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[6]This section draws heavily from Seligman (1995), as well as *New York Times* and *Wall Street Journal* articles from the 1960's. See Mahoney (1995) for details on the pre-1930's history of disclosure regulation and Mahoney (2003) for a discussion of state "Blue Sky" laws.

income statement data) and descriptions of the firm's business, officers, costs of issuing the security, and intended use of any capital.[7]

2. Firms listed on exchanges (such as NYSE or AMEX) and OTC firms that had issued securities of sufficient market value after May 1936 were required to file annual reports (Form 10-K) and semi-annual reports (Form 9-K) with the SEC. They were also required to report material events as they occurred (Form 8-K).[8]

3. Firms listed on exchanges were required to provide proxy statements in advance of shareholder meetings or votes. These statements should contain the qualifications of directors and nominees for directors, executive compensation, and transactions between the company and its officers or directors. All OTC firms were exempted from this requirement.

4. Firms listed on exchanges were required to report the identities of officers, directors, and large shareholders. They also had to report these individuals' holdings of any equity security of the company and provide monthly statements of any changes. Companies could recover any profits that an insider realized from the purchase and sale of the company's stock in any period of less than six months.[9] All OTC firms were exempted from this requirement.

Thus, the 1933 and 1934 Acts created a system of regulation that imposed different requirements on firms, based on where their shares were traded and whether they had made any public offerings after 1936. To summarize, all listed firms were subject to all four disclosure requirements., OTC firms that had made public offerings since 1936 were subject to requirements (1) and (2) above, and OTC firms that had not made a public offering since 1936 were free from all disclosure requirements.[10]

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[7] Technically, an offering is registered under the 1933 Act and a security is registered under the 1934 Act. The security registration under the 1934 Act contains the most important accounting disclosures, similar to the 10-K required annually after registration. Therefore, registration can be thought of as the equivalent of the initial disclosure in the periodic disclosure process.

[8] The requirement that OTC firms with new offerings comply with the periodic reporting requirements was added in separate legislation passed in 1936. This legislation exempted firms for which the total market capitalization across all securities was less than $2 million after the offering. Further, a firm could cease filing these reports if and while the value of the security class of the newly issued security dropped below $1 million.

[9] Under this law, it was legal to trade on private information if the shares were held for longer than six months. In 1968, a federal court gave the SEC the right to penalize all insider trading.

[10] Harvard Law Professor Louis Loss (1983) described the strange system of regulation that prevailed after the passage of the 1933 and 1934 Acts, "...there was a double standard of investor protection – a standard that resulted, more by accident than by design, from the piecemeal adoption of the SEC statutes but that nevertheless glowed with an incandescent *illogic* (emphasis added): if an investor happened to be a stockholder of a listed company...he had the protections afforded by the reporting requirements as well as (with some exceptions) the proxy rules and the insider-trading provisions. If, on the other hand, he happened to hold a security that did not fall within any of these categories but that had been offered to the public and registered under the 1933 Act since 1936, he was likely to have

The available evidence indicates that the lighter disclosure requirements affected the manner in which OTC companies were managed. For example, many OTC-traded companies were not forthcoming with important details about their operations. In 1962 the SEC randomly sampled one fifth of the OTC securities in which trades had been made during the last quarter of 1961. Based on replies from the 1,618 respondents (an 82% response rate), they found:

1. More than a quarter of the firms did not provide any reports on the firms' financial position or results in that year.

2. In 73 percent of proxy solicitations for voting on the Board of Directors, the shareholders were not told the names of the nominees. The proxy solicitations listed the directors' qualifications in only 11 percent of the proxy solicitations. Thus, shareholders were asked to vote blindly for current management or their nominees in the vast majority of cases.

3. In 95 percent of proxy solicitations, management compensation was not reported.

4. 29 percent of the firms did not solicit proxies before shareholder meetings.

Moreover, Seligman (1995) argues that the "vast majority of securities fraud occurred among firms not subject to the SEC's period reporting requirements" (pp. 313-4).

Further, it was widely believed that many OTC firms chose not to list on exchanges precisely to avoid the stricter disclosure requirements on the NYSE and AMEX.[11] This is notable because, even in the absence of regulatory differences, it seems reasonable to presume that shareholders would have preferred that their company's shares were traded on the more liquid NYSE and AMEX. Although we were unable to determine the precise listing requirements of the NYSE and AMEX in this period, market capitalization has always been an important factor in determining eligibility for listing on these exchanges. In our sample of OTC firms, which we describe below, we find that many OTC firms had market capitalizations that were comparable to those of the listed firms. Specifically, there are 258 OTC firms in our sample that were free of all disclosure requirements before the 1964 Amendments and for which we could determine their market value. Roughly 45%

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current information...[due] to the reporting requirements of the Exchange Act but not to the proxy or insider-trading provisions. The third investor, who held an unlisted security in an industrial corporation that had not had any public financing since 1936, was still further from the fire; so far as he was concerned, the whole series of SEC statutes might just as well not have existed except for a few fraud provisions, no matter how large the corporation or how widely distributed its securities" (pp. 462-463).

[11] See the SEC's *Special Study* (especially, Part III, p. 16).

of these firms had a market capitalization that exceeded the 25th percentile market capitalization of firms on the AMEX and NYSE measured at the same time.[12]

3.2 Negotiation and Passage of the 1964 Amendments

Between 1934 and 1961, it was not uncommon for SEC staffers, legislators, or other prominent public figures to call for an extension of the mandated reporting requirements to all OTC firms to rectify the seemingly arbitrary inequities in regulatory intensity. However, these recommendations never seemed to gain any traction in Congress (see Loss (1983), page 464.) For example, Senator Frear of Delaware introduced a bill to extend mandatory disclosure in 1949, but no action was taken because attention turned to higher priorities such as the Korean War (*Special Study*, part 3, page 7.)

In 1961, the SEC's budget was increased and William Cary, the new head of the SEC, called for the agency to be granted new powers, including the extension of disclosure rules to all OTC securities.[13] However, this call was similar to those made by other SEC officials in previous years and there was little evidence that the Kennedy Administration was willing to push for substantive legislative changes in its first year in power.

Also in 1961, there was a scandal on the American Stock Exchange. It was discovered that the company Re and Re offered special options grants to the individuals that determined whether the company could list on the AMEX. This scandal crystallized feelings that US securities markets were not fair. In September 1961, the Commission was authorized by Congress to "make a study and investigation of the adequacy, for the protection of investors, of the rules of ... exchanges and national securities associations" (press release on SEC website). The SEC's mandate was to examine the functioning of US equity markets generally – not necessarily with a focus on OTC firms.

The first part of the *Special Study* was released in April, 1963 and it appeared to change the political climate. The *Special Study* was accompanied by a letter from William Cary stating that the SEC would make several legislative recommendations, including expanding the disclosure requirements for OTC securities. The Senate quickly reacted. On July 9, 1963, a subcommittee unanimously approved a bill extending disclosure rules to all OTC firms. The release of the second installment of the *Special Study* on July 17, 1963 recommended a major overhaul of the OTC

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[12]Prominent examples of firms traded over-the-counter before the passage of the 1964 Amendments include Time Inc., G.D. Searle, Weyerhauser, and virtually all major banks.

[13]Table 1 summarizes the timing of some of the key events leading up to passage and initial enforcement of the Securities Acts Amendments of 1964.

markets. On July 30, 1963, the full Senate passed the Securities Act Amendment which held OTC firms with at least $1 million of assets and 500 shareholders to the same disclosure rules as the 1934 Act imposes on securities traded on the NYSE and AMEX.

For more than half a year it languished in the House as the precise asset and shareholder floors and whether the insurance and banking industries should be exempted were debated. The bill's general principle of increased disclosure was never seriously contested.[14]

The solution to this impasse came in late January and early February of 1964 when President Johnson made two public endorsements of the legislation before the House. Johnson applied his famous skills of persuasion and the controversy over the particular provisions began to evaporate.[15] A House subcommittee passed the bill on March 19, 1964. It was soon evident that it would become law and Cary announced in May that he would resign soon, noting that his work was complete. On August 5 and 6, 1964 the full House and Senate passed identical versions of the bill, thereby sending it on to Johnson who signed it into law on August 20, 1964.

The law extended all four forms of mandated disclosure to OTC firms of sufficient size. Specifically, it required that any OTC firm with at least 750 shareholders and $1 million of assets as of the last day of its first fiscal year to end after July 1, 1964 (or any year after that) must register with the SEC within 120 days of the end of the fiscal year (and thus become subject to all four types of disclosure).[16] Based on their 1961 characteristics, the *Special Study* estimated that roughly 32% of OTC firms exceeded both the asset and shareholder floors. For affected firms with fiscal year ends before the end of 1964 that had not previously registered with the SEC, this deadline was extended to April 30, 1965. The first registrations under the 1964 Amendments were filed in the fall of 1964, but initial filings continued through the end of October, 1965. OTC firms with fewer than 500 shareholders and/or $1 million in assets were unaffected by the 1964 Amendments.

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[14]There was some resistance by business groups such as the US Chamber of Commerce and National Association of Manufacturers on the grounds that compliance would be costly and that business should be free of regulatory burdens. However, Edwin Etherington, the president of the American Stock Exchange, estimated the annual compliance costs at approximately $1500 to $3000 for most OTC companies that were to be covered by the bill and Congress seemed to find this estimate compelling.

[15]Commerce Committee Chairman Oren Harris was the biggest obstacle to the bill's passage in the House. Seligman (1995) suggests that Harris eventually helped enact the legislation in return for Johnson appointing Harris to a Federal district judgeship (which Johnson did in 1965.)

[16]The compliance date for firms that met the asset test and had between 500 and 750 shareholders was the last day of its first fiscal year to end after July 1, 1966.

3.3 The 1964 Amendments as a New Research Design

The basis of our analysis is a comparison of the stock returns of groups of OTC firms that were affected by the 1964 Amendments to the returns of groups of NYSE/AMEX firms that were unaffected by the legislation. Additional variation comes from the fact that different OTC firms complied with different disclosure requirements pre-1964 and that some OTC firms were below the size cutoffs of the 1964 Amendments while others were above these cutoffs.

The difference in the stock returns of affected and unaffected groups of firms measures the treatment effect of the law. We define the treatment effect as $t_i = t_i(\Delta P_i, \Delta D_i)$. ΔP_i is the change in the fraction of OTC firms in group i that comply with the mandatory disclosure requirements due to the passage of the 1964 Amendments. Some firms avoid complying (e.g., by being below the size cutoffs), so $\Delta P_i < 1$. ΔD_i denotes the average change in diversion that occurs among firms in group i that begin disclosing due to the 1964 Amendments. Assuming that the treatment effect is increasing in the fraction of complying firms and in the magnitude of the reduction in diversion, $\partial t_i/\partial \Delta P_i > 0$ and $\partial t_i/\partial \Delta Di < 0$.[17]

The treatment effect, t_i, may vary across groups either due to differences in the changes in the probability of filing with the SEC or the amount of diversion induced by the law (e.g., groups may have different levels of initial diversion). In practice, it is infeasible to estimate these structural parameters because we do not observe ΔP_i or ΔD_i separately.

The remainder of this subsection describes how we categorize the OTC firms into four groups based on proxies for investors' expectations about the unobserved variables ΔP_i and ΔD_i. It also discusses how we divide the 1963-1966 period into three sub-periods to examine the law's effect and perform validation exercises of our approach.

Firm Variation.

We create four groups of OTC firms defined by our proxies for ΔP_i and ΔD_i. Because firms that fell below the asset and/or shareholder floors were exempt from the mandatory disclosure requirements, we use available measures of assets and shareholders to divide firms into those for which investors held high and low expected values of ΔP_i as of the start of 1963. We assume that investors assigned a high value of ΔP_i to firms with measured assets in 1962 exceeding $1 million and more than 500 shareholders and to firms with measured assets exceeding $5 million but no shareholder data.[18]

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[17] We also assume that $t_i = t_i(0, \Delta Di) = t_i(\Delta P_i, 0) = 0$ so if the probability of compliance is zero or the change in diversion is zero, the treatment effect is zero. Also, recall that we define diversion as any management decision that does not maximize the firm's share price.

[18] There are no cases where shareholder information is available but assets are not available. The subsequent results

We further assume that investors assigned a low expected value of ΔP_i to firms that fell below the asset and/or shareholder floors (including those with both assets and shareholder data missing). Expected ΔP_i for these firms was likely to be greater than zero because some firms would grow enough to surpass the size cutoffs of the 1964 Amendments.

The assignment of high and low expected values of ΔD_i is more straightforward. Specifically, we used SEC publications to determine the set of OTC firms that had registered with the SEC and were filing periodic reports as of the start of 1963. We expect that reductions in diversion will be larger among firms newly affected by all four types of disclosure than those only newly affected by the proxy and insider trading regulations.

We then use these two categorizations to create four groups of OTC firms.[19] The first OTC group consists of firms we believe investors assigned relatively high values of ΔP_i and ΔD_i. These firms had not registered with the SEC and were not filing periodic reports with the SEC as of 1963 but were above the size cutoffs of the 1964 Amendments as of the beginning of 1963. We refer to this as the 0-4 group. The number before (after) the dash refers to the number of disclosure types that the firm was required to comply with before (after) the 1964 Amendments were in force. We use this same naming convention to denote the other groups.

The second group consists of firms that had registered with the SEC, filed periodic reports with the SEC in 1963, and were above the size cutoffs of the 1964 Amendments as of the beginning of 1963. Thus, investors likely assumed they had higher values of ΔP_i, but lower values of ΔD_i than group 0-4, because they were subject to only two new disclosure rules – the proxy and insider transaction regulations. We label this group 2-4.

The third group is labeled 0-0 and is comprised of non-filers as of 1963 that fall below the asset and/or shareholder floors of the 1964 Amendments. We assume that the market had a low expected value of ΔP_i but a high value of ΔD_i for this group. Finally, the 2-2 group consists of 1963 filers that fell below the asset and/or shareholder floors. Our presumption for these firms is that the market had low expected values of both ΔP_i and ΔD_i for this group.

The basis of our analysis is a comparison of the stock returns of each of the OTC groups to an

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are insensitive to sensible changes in the asset cutoff used for firms with missing shareholder data.

[19] We use data on assets, shareholders, and filing status as of the start of 1963 to assign firms to the various OTC groups. This information predates the first serious discussions about passing the legislation that would become the 1964 Amendments. Defining groups based on such ex-ante information is preferable to defining groups based on which firms eventually ended up complying. First, compliance is conditional on size. Therefore, firms that eventually did comply would mechanically tend to have had higher returns in the past. Forming groups based on ex-ante variables avoids this problem. Second, some firms may manipulate their assets or shareholders so they do not have to comply with the law. From a policy perspective the interesting treatment effect accounts for such (likely unavoidable) manipulation rather than looking only at firms that comply.

index of firms that were unaffected by the 1964 Amendments. The index is comprised of firms from the AMEX and NYSE, all of which were required to comply with the four disclosure requirements both before and after the 1964 Amendments. We create a separate 4-4 group for each OTC groups.

These 4-4 groups are constructed so that the distribution of the underlying firms' market capitalizations is similar to the distribution of the corresponding OTC group. Specifically, we calculate the weekly returns of the 0-4's and 2-4's corresponding 4-4 groups in the following four steps:

1. We divide the NYSE/AMEX firms present in CRSP at the beginning of 1963 into deciles of market capitalization. The deciles are never refreshed to include new entrants to CRSP or changes in existing firms' market capitalization. Consequently, the numbers of firms that comprise each decile will decline over time as firms go bankrupt or disappear from CRSP for other reasons.

2. We calculate the weekly unweighted average returns of each decile.

3. We determine which market capitalization decile of the NYSE/AMEX firms each OTC firm would belong to in the first week of 1963 if it were trading on one of these exchanges. The firm is then matched to that decile throughout the analysis.

4. The returns of each OTC group's matched 4-4 group in a given week are calculated as the weighted average of the NYSE/AMEX decile index returns. Each decile's weight is equal to the fraction of the OTC group's firms with a non-missing return in the relevant week that are matched to that decile.

We calculate the weekly returns of the 0-0's and 2-2's matched 4-4 groups as the simple average of the returns of the two smallest NYSE/AMEX deciles, because market capitalization data is unavailable for most OTC firms in these groups. We use the smallest deciles because, as we will show below, they are much smaller than the 0-4 and 2-4 firms in terms of assets and sales.[20]

If the 1964 Amendments were valued by outside shareholders, then we expect the treatment effects to differ across groups. For example, the 0-4's treatment effect would be positive and of the largest magnitude, because this group includes firms with high expected values of ΔP_i and ΔD_i. By analogous reasoning, the 2-2's treatment effect will be the smallest. The 2-4 and 0-0 treatment effects would be between the 0-4 and 2-2 effects. The ordering of the 2-4 and 0-0 effects will depend on whether the effect of ΔP_i or ΔD_i is larger.

Time Variation.

We divide 1963-1966 into three sub-periods. We define the time from January 1, 1963 through August 24, 1964 as Period 1. During this period, the probability that a law extending the four

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[20]The market capitalization is missing for fewer than ten of the 0-4 and 2-4 firms. We assume that these firms' market capitalization equal their assets multiplied by the median market capitalization to asset ratio of the firms in their group.

disclosure requirements to OTC firms increased from some unknown level to near one.[21] Because asset markets are forward-looking, we test whether affected firms had abnormal returns in this period. Specifically, we test (for each OTC group) the null hypotheses that the OTC groups had zero abnormal excess returns relative to the size-matched NYSE/AMEX (4-4) group. A failure to reject the null for all OTC groups would suggest that on average the disclosure requirements were not expected to produce information that was valued by outside shareholders (after accounting for compliance costs).

We also attempted to identify sub-periods of Period 1 when there were unexpected large increases or decreases in the probability of the legislation's passage. The availability of such periods would allow for tighter hypotheses that could more easily be refuted by the data. Ultimately, we were unconvinced that it would be possible to precisely identify periods of such discrete surprises so we do not sub-divide Period 1.[22]

Period 2 runs from August 25, 1964 through November 15, 1965. In this period, firms were required to begin to comply with the Amendments' requirements if they were above the size cutoffs. As with Period 1, we test whether the OTC groups have abnormal excess returns relative to the size-matched NYSE/AMEX 4-4 groups.

A rejection of this null for Period 2 could have at least three interpretations. First, if the market had incorrectly expected that the amendments would not be enforced (or that enforcement would be delayed, as it briefly was for a subset of firms), then prices may have been affected by the increasing likelihood that the 1964 Amendments would be enforced as planned. Second, a rejection of the null could indicate that, as of the end of Period, the market had incorrect expectations about the fraction of firms that would comply or the average financial position revealed in the registration statements. A third possibility is that the market correctly assumed that the 1964 law would be enacted and also had correct expectations about the fraction of firms in the affected group that would comply with the law. Here, we would expect zero abnormal excess returns. Under this third scenario, a rejection of the null hypothesis would suggest that our approach is susceptible to falsely

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[21] Although the *Special Study* was released on April 3, 1963, we suspect that its basic findings may have begun to permeate the investment community earlier. How much earlier is unknown, so the choice of January 1 as a beginning date has an element of arbitrariness. The choice of August 24, 1964 as an end date seems uncontroversial, as that is the date of the first issue of *Barron's* after Johnson signed the bill.

[22] As an example, we initially suspected that Johnson's announcement that he supported the bill on January 22, 1964 represented a sharp increase in the probability of passage. That same day, Representative Harris made statements indicating the House would soon act on the bill. However, the relevant article was printed on page 50 and highlighted the fact that Johnson had not allocated any new funds to help enforce the proposed legislation. By contrast, when Johnson more aggressively pushed for the bill as part of a February 5 "Special Message on Consumer Interests", the *Times* reported the endorsement prominently the next day and followed up with a February 9 story declaring that the endorsement had made the prospects for the bill "suddenly bright." Thus, it is unclear which actions surprised the markets so we cannot form a precise hypothesis to test.

finding abnormal excess returns and this would undermine the credibility of our research design. As we will discuss in more detail below, we use finer delineations of firm groups and time to distinguish between these interpretations.

Period 3 runs from November 15, 1965 through the end of 1966 when our data file ends. This period provides the best opportunity to judge the validity of our approach, because there was virtually no new information about the Amendments or their impact. Consequently, under the standard efficient markets hypothesis, a failure to reject the null of zero abnormal excess returns for the OTC groups provides support for the validity of our research design in the other periods.

4 Data

4.1 Data Sources

We use the Center for Research in Security Prices (CRSP®) database to calculate returns of NYSE/AMEX firms. We restrict the sample to those firms present in the first week of January 1963 and this sample of firms is intentionally not refreshed in later weeks. A corresponding electronic dataset of OTC firms did not exist for the period we study, as OTC firms are not available in CRSP until December 1972. Therefore, we created the equivalent of CRSP for 1,182 OTC firms for 1963-66.

The calculation of weekly OTC returns required the compilation of data on weekly bid and ask share prices, dividends, stock splits, mergers, name changes, and liquidations. We also collected data on the firms' industries, financial and accounting positions, as well as information on which firms filed reports with the SEC in each particular year of our study, and the exact date that firms filed with the SEC for the first time. The resulting database includes hand-entered information from seven separate sources.

The sample of OTC firms and their bid and ask prices were determined from *Barron's* weekly publications in the 1963-1966 period. The relevant pages were photocopied, scanned, and sent to Mascon Computer Services (P)Ltd. of India. They hand entered the security name, the bid price, and the ask price from each issue of *Barron's*.

Our primary OTC sample is comprised of 1,182 OTC securities that appeared in the January 7, 1963 issue of *Barron's* and meet our sample requirements.[23] We formed a panel data file of these securities by using their reported name to match firms across issues of *Barron's*. Just like the

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[23] We did not include banks or insurance companies because they were regulated by multiple agencies and treated differentially by the 1933, 1934, and 1964 Acts. We also excluded preferred or B class shares to avoid double counting firms and because the expected effect of the law on these classes of shares was less clear.

NYSE/AMEX sample, the panel of OTC firms is never refreshed (with entrants to the *Barron's* OTC stock tables), because our goal is to estimate the impact of the imposition of mandated disclosure requirements on an existing set of firms.

We briefly describe construction of the dataset here and provide more detail on our quality assurance procedures, sample selection, and procedures for firms that exit the sample in the Data Appendix. Elaborate checking was performed to detect data entry errors, to minimize spurious exit of firms in cases where name abbreviations differed slightly between *Barron's* issues, and to detect spuriously measured returns due to typographical errors either in *Barron's* or in our transcription of the *Barron's* entries. For example, we dropped price observations from weeks when the bid price exceeds the ask price and observations with a 1-week return greater than 200%. Our qualitative results are unchanged by reasonable variations on these rules.

We hand entered all dividend and stock split information from *Standard and Poor's Annual Dividend Record*. Where necessary, we used the *National Stock Summary* and the *Directory of Obsolete Securities* to verify dividends.

During our sample period, some securities permanently disappeared from *Barron's*. To determine the reason for such *Barron's* exits we used *CRSP, Standard and Poor's Annual Dividend Record*, the *National Stock Summary*, and the *Directory of Obsolete Securities*. In cases of firms that move to the NYSE/AMEX (and thus appear in *CRSP*), change names, or merge, we continue the time series of returns whenever possible. In cases of liquidations, exits from *Barron's* for no apparent reason, or prolonged periods of missing information in *Barron's*, we assign an exit return to the first week where post-exit information is available. The objective of continuing series where feasible and calculating exit returns otherwise is to correct for any bias in returns that may otherwise result if firms have above or below average returns in the week they exit *Barron's*. The Data Appendix provides details on our exit return procedures. Our qualitative findings are unaffected by the implementation of reasonable changes in the approach used to calculate exit returns.

Appendix Table 1 summarizes the causes of permanent attrition from the Barron's sample. Within each of these categories, it also provides counts of the securities for which the time series could be continued. We succeeded in assigning an exit return for 74.6% of the securities where it was impossible to continue the time series. The largest single source of attrition from the Barron's sample is movement to a listed exchange. Over the course of the four years, 22.6% of the OTC sample firms move to the NYSE or the AMEX. The frequency of movements to exchanges is especially high in 1963 and 1964, slows somewhat in 1965, and slows even more in 1966. This is consistent with the notion that as mandatory disclosure requirements became more likely, the value of staying unlisted declined.

An essential component of the analysis is the accurate identification of the firms that disclose financial information through official SEC channels. The *Directory of Companies Filing Annual Reports with the SEC Under the Securities Exchange Act of 1934* reports the identities of each company that complies with mandated disclosure requirements. Each company's filing status was collected annually for our sample of OTC firms. The *US SEC News Digest* lists the exact date that the SEC considered the complying firms in our sample to have fulfilled the registration requirement in the case of the 0-4 firms and initiated the filing of proxy and insider trading reports in the case of the 2-4 firms. We use these dates to implement a firm-level event study analysis of the consequences of the initial compliance with these disclosure requirements.

We gathered accounting information for firms in our *OTC* sample from the annual *Moody's Industrial Manual, Moody's Public Utility Manual, Moody's Bank and Financial Manual,* and *Moody's Transportation Manual.* The industry, or SIC code, of the OTC firms was determined from the *Moody's* Manuals and the *Directory of Companies Filing Annual Reports with the SEC Under the Securities Exchange Act of 1934.*

4.2 Attrition and Filing Status by Groups

The top of panel A of Table 2 displays the number of firms in each of the four OTC groups at the start of our analysis. It also shows the attrition from each group over the analyzed period. The 0-4 group has 228 firms in the beginning of 1963. This group is considerably smaller than the 2-4 group because many 1963 OTC firms had made a public offering in the previous twenty-seven years or issued securities bringing their market value above $2 million. Sample attrition is similar among these two groups, with approximately 80% of each group still in our OTC sample at the end of 1966. Sample attrition is higher in the 0-0 and 2-2 OTC groups. This is not surprising since these groups are comprised of relatively small firms due to the 1964 Amendments' size cutoffs.

The bottom part of the table provides the identical information for the 4-4 firms traded on the NYSE or AMEX exchanges in the first week of January 1963. We also separately report attrition rates for each market capitalization decile of the 4-4 firms. These deciles of 4-4 firms are used to construct our size-matched unaffected groups. If the 0-4 and 2-4 groups of OTC firms had been traded on the NYSE/AMEX, their median (mean) market capitalization deciles would have been 3 (3.36) and 3 (3.74), respectively. The similarity in the survival rates between the 0-4 and 2-4 OTC firms and the smallest deciles of the listed firms provides reassuring evidence on the successfulness of our efforts to form a panel of returns for the OTC firms. That is, the attrition rates among OTC firms appears to be due to genuine attrition and does not reflect insufficient data collection efforts on our part.

Panel B of Table 2 reports the percentage of firms filing with the SEC for each of the OTC groups, year by year. The dramatic increases in the fraction of firms complying with all four mandated disclosure requirements between 1964 and 1965 (the first year that many of these firms were required to file with the SEC) suggests that managers of many firms considered the costs of non-compliance to be greater than the benefits. Further, our rules for assigning OTC firms to the groups appear to be validated by the larger increases in filing probabilities for the 0-4 group, relative to the 0-0 group and the 2-4 group compared to the 2-2 group. See the Data Appendix for further details on group classifications.

4.3   1962 Characteristics of Groups.

Table 3 reports the means and medians of a number of important variables as of the beginning of 1963, by OTC group. It also reports the number of firms with non-missing data for each variable. The first panel contains the share prices and bid-ask spreads in dollars and as a percentage of the share price from the first week of 1963. The entries indicate that the median share price in the 0-4 and 2-4 groups is two to three times greater than that of the other OTC groups. This is informative because empirically share price is correlated with market capitalization and the market capitalization is not available for many of the 0-0 and 2-2 firms.

The bid-ask entries reveal that, controlling for size, firms that were already filing with the SEC in 1962 had lower percentage bid-ask spreads than the firms that were free of SEC disclosure requirements. Specifically, the 2-4's (2-2's) percentage bid-ask spread is lower than the 0-4's (0-0's). If bid-ask spreads reflect asymmetric information between market participants, then these numbers suggest that the information provided by initial filers (those that had registered and filed periodic reports pre-1963) helped to reduce information differences between outside investors and insiders.

The remainder of the table reports on a series of 1962 firm-level variables collected from various issues of the *Moody's* handbooks. The mean (median) market capitalization (in millions of 1963 $'s) for the 0-4 and 2-4 groups are $19.0 ($9.0) and $92.8 ($10.6), respectively. The total market capitalizations of these two groups in 2003 $'s are $26 billion and $408 billion, respectively. While most 0-0 and 2-2 firms have missing market capitalizations, the other variables confirm that the 0-4 and 2-4 firms are much larger than the 0-0 and 2-2 firms (e.g., see assets).

Many of the accounting variables are missing for a substantial fraction of the firms, especially 0-0 and 2-2 firms. This highlights the difficulty that current and prospective shareholders of OTC firms faced in obtaining relatively basic information about these companies before the 1964 Amendments.

5   Empirical Methodology

We construct a time series of the equal-weighted portfolio returns for each OTC group. This is denoted as:

$$R_{gt} = \frac{1}{N_{gt}} \Sigma_{i=1}^{N_{gt}} R_{igt} = \frac{1}{N_{gt}} \Sigma_{i=1}^{N_{gt}} (P_{igt} - P_{igt-1} + D_{igt})/P_{igt-1} \tag{1}$$

where R_{gt} is the return for holding the group g portfolio from the end of week $t - 1$ to the end of week t. The return for each firm in the portfolio, R_{igt}, is calculated as the change in the split-adjusted price per share at the ends of week t and $t - 1$ (i.e., $P_{igt} - P_{igt-1}$), plus any split-adjusted dividends paid between the price observations (i.e., D_{igt}), all divided by the split-adjusted price at the end of week $t - 1$. N_{gt} is the number of firms in group g in week t.

We model the returns using a standard four-factor model:

$$R_{gt} - R_{ft} = \alpha_g + \beta_{1g}(R_{mt} - R_{ft}) + \beta_{2g}SMB_t + \beta_{3g}HML_t + \beta_{4g}MOM_t + \varepsilon_{gt} \tag{2}$$

where R_{ft} is the return on a risk-free asset, which is measured as the Treasury bill rate. This equation controls for the difference between market and risk-free returns, two factors based on Fama and French (1993), and a momentum factor based on Carhart (1997). The market return, R_{mt}, is measured as the value-weighted CRSP return using all NYSE and AMEX firms present in weeks t and t-1. The three factors are measured as the difference in the returns of portfolios of small and large stocks (SMB), value and growth stocks (HML), and stocks with high and low returns over the two to twelve months prior to the current date (MOM).[24] The g subscript on the parameters underscores that the effect of the factors can vary across groups. ε_{gt} is the unobserved determinant of group g's return.

α_g measures the abnormal excess returns specific to group g. The appeal of this measure of abnormal returns is that it has been purged of any covariance with the overall market and the three factors. This is important because a group may have high or low returns in the examined period simply because of its riskiness relative to the market or because it is disproportionately comprised of small, value, and/or high momentum firms.[25] The fitting of equation (2) is considered a standard

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[24] Kenneth French generously provided us with the SMB and HML daily series from 1963-1966. Using daily return data, we calculated the weekly momentum series based on the formulas on French's web page (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.)

Thee are two important consequences of the fact that the market return and three factors are calculated with NYSE and AMEX data. First, incomplete market capitalization and accounting data for the OTC firms do not pose a problem for estimation. Second, all the listed firms are unaffected by the 1964 Amendments so the factors are not a function of the law.

[25] In the cross-section of U.S. stocks, it is well documented that the α's from a 4-factor model are much more tightly

method to test for abnormal excess returns.

When the group g is an OTC group, we interpret the estimated α_g from equation (2) as the effect of 1964 Amendments. The credibility of this interpretation rests on whether the 4-factor model has adjusted for all determinants of stock returns, except the 1964 Amendments. This may not be a reasonable assumption and to see this consider, a shock to the returns of all firms of the size typical in one (or all) of the OTC groups. By its very definition, such a shock is unrelated to the legislation because it affects firms traded on the OTC *and* NYSE/AMEX firms. In such a case, the estimated α_g for an OTC group would capture the effect of the 1964 Amendments and the shock, so estimated $\alpha_g = \alpha_{g,\text{1964 Amendments}} + \alpha_{g,\text{Size component}}$. Hence, it would be invalid to interpret α_g as a causal estimate of the abnormal excess returns due to the legislation.

Our preferred approach is robust to some shocks to OTC groups' returns that are unrelated to the law. Specifically, we difference versions of equation (2) for an OTC group and its corresponding size-matched 4-4 group. An example of special interest is the difference between the 0-4 group and its corresponding 4-4 group, which becomes:

$$
\begin{aligned}
R_{0-4,t} - R_{4-4,t}^{0-4} &= (\alpha_{0-4} - \alpha_{4-4}) + (\beta_{1,0-4} - \beta_{1,4-4})(R_{mt} - R_{ft}) + (\beta_{2,0-4} - \beta_{2,4-4})SMB_t \\
&\quad + (\beta_{3,0-4} - \beta_{3,4-4})HML_t + (\beta_{4,0-4} - \beta_{4,4-4})MOM_t + (\varepsilon_{0-4,t} - \varepsilon_{4-4,t}), \quad (3)
\end{aligned}
$$

where $R_{4-4,t}^{0-4}$ equals the return of the 0-4 matched 4-4 group in week t. The estimated β's are the difference in the loadings between the 0-4 and the size-matched 4-4 groups. We fit this equation separately for each of the four OTC groups in the three periods. To account for the possibility of unequal variances across weeks, we present standard errors calculated with the Eicker-White formula that allows for heteroscedasticity of an unspecified form throughout the paper.

The parameter of interest is $(\alpha_{0-4} - \alpha_{4-4})$, which is the difference in the abnormal excess returns between the 0-4 and the size-matched 4-4 groups. This differencing removes all shocks common to the 0-4 and size-matched 4-4 groups (e.g., $\alpha_{g,\text{Size component}}$) from equation (3), so such shocks cannot influence the parameter of interest. Of course, shocks specific to the OTC groups that are unrelated to the law remain a potential source of confounding. Our focus is on the test of whether the null hypothesis that $(\alpha_{0-4} - \alpha_{4-4})$ is equal to zero can be rejected and we interpret this as a test of whether the 1964 Amendments affected stock returns. We also present estimates of α_g for the OTC groups from the estimation of equation (2), but these results are not emphasized because they are less likely to be reliable.

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distributed around zero than the α's from the basic CAPM using $R_{mt} - R_{ft}$ as the only factor.

Four other features of our approach merit highlighting. First, as equation (1) indicates, a portfolio's weekly return is calculated as the simple average across the returns of firms in that portfolio. This is equivalent to a portfolio that is rebalanced every week to ensure an equal weighting across all firms. The advantage of this approach is that returns can be calculated when the number of shares outstanding is unknown. The primary shortcomings are that it would involve large transactions costs and it does not mimic a value-weighted buy-and-hold strategy that many investors employ.

We probe the robustness of our results to alternative portfolio construction strategies in a few ways. We present results from a buy-and-hold strategy with equal initial weighting. This approach begins by putting an equal dollar value in each stock in the relevant OTC or NYSE/AMEX group and then assumes that no trades are made subsequently. To calculate the portfolio's return from date t to $t+1$, stock $i's$ weight equals (value of holdings of stock i at t)/(total value of portfolio at t). Consequently, the weight on a particular stock evolves over time based on its returns relative to the rest of the portfolio. We also implement a value-weighted buy-and-hold strategy, where each firm's initial weight is equal to the firm's share of the portfolio's total market capitalization at the beginning of the relevant period.[26] The weights then evolve in the same way as in the buy-and-hold with equal initial weighting approach.

Second, the estimated abnormal excess return from equation (3) may be biased by industry-specific shocks that are unrelated to the law if there are differences in the industry composition of the OTC and 4-4 groups. To probe this possibility, we also present results where the weekly returns for the companion 4-4 groups are calculated with the week-specific 2-digit SIC industry weights of the relevant OTC groups. Because there are not enough NYSE/AMEX firms within each 2-digit industry to calculate industry-specific size decile returns, we use all firms in the smallest six market capitalization deciles to calculate the 4-4 industry index returns. Thus, these industry index returns are partially size-matched.

Third, the high volatility of OTC firms' returns and the relatively short panels mean that it may be difficult to estimate the α's precisely.[27] Further, there are substantial differences across firms in their volatility of returns.[28] Consequently, we supplement the group-level analysis with firm level

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[26] This approach requires data on the shares outstanding to calculate firms' market capitalization. Because this variable is missing for 76% and 55% of the 0-0 and 2-2 firms, the results of the value-weighted buy-and-hold strategy are not fully comparable to those from the other strategies considered for these groups.

[27] The median standard deviation of firm-level weekly returns is 4.3% in the OTC sample while the comparable figure for NYSE/AMEX firms is 3.5%.

[28] For example, we calculated the standard deviation of each firm's weekly return above the riskless rate in the first 12 weeks of 1963. The 10th, 25th, 50th, 75th, and 90th percentile of these standard deviations are 0.019%, 0.027%, 0.042%, 0.063%, and 0.093%, respectively.

GLS regressions. In these specifications, the dependent variable is $R_{i,0-4,t} - R_{4-4,t}^{0-4}$. All observations for a firm are weighted by the square root of the inverse of the standard deviation of the firm's weekly excess return (over the size-matched 4-4 portfolio return) calculated based on the first 12 weeks of 1963.[29] Because the regression is run at the firm level, the comparison 4-4 return used for a given OTC firm is the average return for NYSE/AMEX firms in the size decile that the OTC firm would have belonged to at the beginning of 1963 had it been traded on the NYSE/AMEX. We cluster the standard errors in the firm-level analysis by week to account for cross-firm correlation in the error terms for a given week and allow for unspecified heteroscedasticity.

Fourth, a drawback of our comparison of returns during Periods 1, 2, and 3, is that there isn't firm-level variation in the timing of these periods. In Section 6.4, we exploit firm-level differences in the timing of the final resolution of compliance uncertainty to further test whether investors valued the mandatory disclosure requirements. Specifically, we conduct a firm-level event study of returns during the weeks that news of a firm's official registration with the SEC became known to market participants.

6 Results

6.1 Unadjusted Returns

We begin with a graphical analysis of the unadjusted returns by group. Figures 1a and 1b report the cumulative average returns for the four OTC groups and the three size-matched 4-4 groups over the course of our sample. Each data point represents a week's return for a group added to the sum of the return in all previous weeks. The vertical lines denote divisions between the three periods.

Figure 1a reveals that by the end of Period 1, the 0-4 and 2-4 groups have the largest cumulative returns of 23.2% and 19.8%, respectively. These groups continue to outperform the other OTC groups through the end of Period 2. Also, the 2-2 group, which the market was likely to think had both a low probability of increasing its disclosures and a small potential change in diversion upon disclosure (relative to the 0-0 group), had the lowest returns of any OTC group. Overall, these plots of the raw data are consistent with investors valuing the disclosures mandated by the 1964 Amendments, because the groups most likely to have to make new disclosures (0-4 and 2-4 firms) have relatively high returns. Also, the raw returns are consistent with the predictions that the 0-4's

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[29] We estimate return standard deviations based on the first 12 weeks of 1963 only, because news about the 1964 Amendments may affect standard deviation estimates. It is unlikely that there were discrete "bursts" of news about the 1964 Amendments during the first three months of 1963 because the first part of the Special Study was released only at the start of April 1963.

would have the largest returns and the 2-2's would have the lowest returns in this period.

Figure 1b presents the plots of the returns for the 4-4 groups. Throughout the first two periods, all three 4-4 groups have virtually identical returns. This suggests that the higher cumulative returns of the 0-4 and 2-4 groups (compared to the 0-0 and 2-2 ones) in these periods cannot be explained by shocks to firms of their size in these periods. In the third period, the 4-4 group that is comprised of the NYSE/AMEX firms in the smallest two deciles of market capitalization and is matched to the 0-0 and 2-2 groups outperforms the other two 4-4 groups. It is evident that in this final period, small firms outperformed larger firms and this likely explains higher relative returns of the 0-0 and 2-2 groups (compared to the 0-4 and 2-4 ones) in Period 3 that are apparent in Figure 1a.

Our focus is on the returns of the four OTC groups relative to the size matched 4-4 groups. We therefore take an additional look at these comparisons in the raw data. Figures 2a, 2b, and 2c depict the unadjusted cumulative returns for the 0-4, 2-4, and 0-0 and 2-2 groups and their corresponding 4-4 groups. Figure 2a reveals that the 0-4 group and its 4-4 group had cumulative returns of approximately 20% in period 1. The two groups also had fairly similar returns in Periods 2 and 3, though the 0-4 group does a bit better than its size-matched 4-4 group during Period 2. Figure 2b demonstrates that the 2-4 group and its size-matched 4-4 group had virtually identical returns in Periods 1 and 2, but in Period 3 the 4-4 group modestly outperformed the 2-4 group. Finally, Figure 2c underscores that the 0-0 and 2-2 groups underperformed their size-matching 4-4 group in Period 1. Moreover, this underperformance appears to persist in the remaining periods.

Figure 2 demonstrates that the unadjusted returns in the 0-4 and 2-4 OTC groups and their size-matched 4-4 groups were very similar throughout the 1963-66 period. This is especially so in the key Period 1 where we expect any effect of the 1964 Amendments on stock returns to be concentrated. In the next subsection, we find evidence of positive abnormal excess returns for the 0-4 group, and to a lesser degree the 2-4 group, in Period 1. This subsection's unadjusted results highlight that the validity of these subsequent results rests crucially on the validity of the CAPM and the four factor model. The differences in performance between the four OTC groups are, however, not very sensitive to whether factor adjustments are made.

6.2 Period 1

Table 4 presents estimates of the abnormal excess returns from estimating equation (3) in Period 1. The first panel presents these estimates for the 0-4 group. As discussed above, we expect that any abnormal excess returns would be greatest for this OTC group. The remaining panels examine the 2-4, 0-0, and 2-2 groups.

Within a panel, the first six columns reports estimates of α (the excess α over and above the size-matched 4-4 group), its standard error (in parentheses), and the R-squared statistic from the fitting of alternative versions of our preferred equation (3). The last column presents results from the more standard equation (2). In the first column, the only adjustment is for the overall market return. All subsequent columns add the three standard factors to the specification. In all columns, except (5) and (7), we use the 4-4 groups corresponding to the relevant OTC group to difference out shocks unrelated to the 1964 Amendments. In column (5), we use an industry-matched 4-4 group as the comparison.[30] Because column (7) presents the results from the estimation of equation (2), no comparison group is used in those estimations.

The table also explores the sensitivity of the results to alternative portfolio construction rules. In all columns, except (3) and (4), we assume that investors in our constructed portfolios, or groups, rebalance their portfolios every week to keep them equally weighted across all securities. Column (3) reports the results from a buy-and-hold strategy with equal initial weighting. In column (4), the portfolios are based on a value-weighted buy-and-hold strategy.

Lastly, Column (6) reports the results of the firm-level GLS version of equation (3). All these specification details are summarized in the bottom rows of the table.

The first panel indicates that the 0-4 group had economically significant abnormal excess returns in Period 1. Columns (2) through (6) are probably the most reliable estimates, because they are from specifications that adjust for the four factors and use NYSE/AMEX firms as a comparison group. These five estimates of the abnormal excess weekly return range from 0.10% to 0.13%, which implies a cumulative abnormal excess return of 8.5-11% over the 85 week period.[31] The tight range of these estimates across specifications is reassuring.

Although the point estimates are economically significant, they border on statistical significance at conventional levels.[32] For example, tests against the null of zero for these five estimate lead to

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[30] We determined the primary industry for all firms in the 0-4, 2-4, and 2-2 groups. We were unable to ascertain the industry for 27 firms in the 0-0 group, so these firms are omitted from the calculation of industry adjusted returns. Consequently, the 0-0 industry matched estimates are not comparable to results from the other portfolio construction methods.

[31] Period 1 spans 85 weeks, but the regressions only include 84 observations. This is because the prices on the OTC and NYSE/AMEX are not comparable for the week of John F. Kennedy's assassination. The prices are not comparable because, as the *Wall Street Journal* (*WSJ*) reported, "Unlike the exchanges, trading over the counter was generally suspended immediately by traders last Friday as initial reports that President Kennedy had been wounded flashed across the ticker" (*WSJ*, November 27, 1963). Trading continued on the NYSE and AMEX for at least a half hour after the shooting. As a result, the NYSE/AMEX firms had large declines in that week while the returns of OTC firms were in line with a typical week. Consequently, we drop prices from the assassination week and treat the returns from the week before the assassination to the week after as a single observation.

[32] The dramatically lower R-squared statistics for the firm-level, relative to portfolio-level, regressions are because

two p-values between 0.10 and 0.15, two between 0.10 and 0.05, and one between 0.05 and 0.01. The most precise estimate is in column (6) and is a result of the GLS firm-level estimating equation. A comparison of the equal weighted portfolio and GLS firm results in columns (2) and (6) reveals that the GLS procedure reduces the standard error by roughly 18%.[33]

The strongest 0-4 results, both statistically and economically, are in column (7) and come from the estimation of equation (2). This specification suggests a cumulative abnormal excess return of 17% and the null of zero can be rejected at the 1% level. This specification is standard in the literature and considered a robust method for detecting abnormal excess returns. As the previous section highlighted, however, the absence of a comparison group means that these estimates may be likely to confound the effect of the law with shocks common to firms that were affected and unaffected by the law. Appendix Table 2 reports the estimated α's and market β's from the estimation of equation (2) for the four OTC groups and three 4-4 groups for Period 1 (as well as the other Periods).

The second panel reports the results for the 2-4 group. The point estimates from the most reliable specifications (i.e., columns (2) through (6)) range from 0.04% to 0.09%, which imply a cumulative abnormal excess return of 3.5-7.7%. Although these estimates are all in a relatively tight range, none of them would be judged to statistically differ from zero at the 10% level. Overall, the 2-4 findings provide some evidence that investors valued the proxy and insider trading disclosure requirements, even for firms that were already registered with the SEC and filing regular reports. But, the imprecision of these estimates tempers any conclusions.

The third and fourth panels report the results for the 0-0 and 2-2 groups. All but two of the estimated α's for these groups are negative. The standard errors are larger here than in the first two panels, likely because of these groups' smaller sample sizes. Only two of the 14 estimates have an associated t-statistic greater than 1.

Figure 3 summarizes the Period 1 abnormal excess returns graphically for the four OTC groups. The data points to the left of the first vertical line are obtained from the Period 1 regressions. Specifically, we measure the abnormal excess return in each week as the sum of the estimated α and the residual from the column (2) specification (i.e., equal weighted with adjustment for four

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the portfolio approach averages out much of the idiosyncratic risk.

[33] Two points about the GLS results bear mentioning. First, the point estimates modestly differ in columns (2) and (6) because the panel of firms is unbalanced. Consequently, every week receives an equal weight in column (2). In column (6), due to firm attrition, the earlier weeks when the sample of firms is intact receive a larger weight. Second, the reduction in the standard errors is due to the GLS weighting procedure, not because it is a firm-level equation. For example, estimation of an OLS firm-level version of equation (3) that clusters the standard errors within a week produces standard errors virtually identical to those from the portfolio-level equation in column (2).

factors) in Table 4. These abnormal excess returns are then summed cumulatively and plotted.

The figure reveals that the Period 1 abnormal excess returns for the 0-4 group occurs throughout that period. This is consistent with our impression that the probability of the passage of the legislation increased gradually during the entire period. In other words, these graphs do not reveal a sharp increase (or decrease) in abnormal returns consistent with an unexpected jump upward (or downward) in the probability that mandated disclosure requirements would be extended to the OTC groups. The figure suggests that there are negative cumulative abnormal returns for the 0-0 and 2-2 groups but the large standard errors from these groups' regressions make it difficult to put much stock in the precise position of their plots.

It is also possible to compare the estimated α's across OTC groups. A comparison of the entries within each column reveals a regular ordering of the abnormal excess returns. Specifically, the 0-4's estimated α is always the largest and the 2-4's is always the second largest. Additionally, the 0-0's and 2-2's are the third and fourth largest, respectively.[34] In order to test whether these differences are statistically relevant, we stacked the data for the four OTC groups and estimated a pooled version of equation (3) that allows the factor loadings to vary by group. In the firm-level GLS version from column (6), the hypotheses that the estimated α's are equal for the 0-4 and 0-0 groups and the 0-4 and 2-2 groups can be rejected at the 7% and 2% levels, respectively. In the case of the portfolio-level specification from column (2), the estimates are less precise and these same nulls cannot be rejected.

Similar to the unadjusted comparisons, this comparison of the factor adjusted estimates supports the notion that investors valued the disclosures mandated by the 1964 Amendments, because the groups most likely to have to make new disclosures (0-4 and 2-4 firms) have relatively high factor adjusted returns. Further, they are consistent with the predictions that the 0-4's would have the largest returns and the 2-2's would have the lowest returns.

Overall, in the context of the conceptual framework, these results suggest that diversion lowered the value of the 0-4 group firms by 8.5-11%. The 2-4's point estimates indicate modest positive abnormal excess returns for these firms, but their imprecision makes it difficult to draw firm conclusions.

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[34] The one exception to this ordering is in column (5), which presents the industry-matched results. In this column, the 2-2's are the 3rd largest and the 0-0's are the 4th largest. Since industry was unavailable for some of the 0-0 firms, these results are not directly comparable to the other columns.

6.3 Period 2

Table 5 is identical to Table 4, except that it reports the results from the 64-week-long Period 2. We begin by examining the results for the 2-4, 0-0, and 2-2 groups. The point estimates for these three OTC groups are generally of a small magnitude and estimated imprecisely. Within each group, the point estimates are quite sensitive to specification. For example, there are positively and negatively signed estimates for each group.

The only statistically significant estimate is from the estimation of equation (2) (i.e., column (7)) for the 2-4 group, which indicates an average abnormal excess return of 0.12% per week. This specification continues to provide the strongest support for the 1964 Amendments' having a positive impact on stock returns, but, as we have pointed out, it is susceptible to shocks to returns that are unrelated to the law. Taken together, the results in the bottom three panels appear consistent with the hypothesis that the market had the correct expectation about the fraction of firms that would file and the filers' revealed financial position for the 2-4, 0-0, and 2-2 groups in Period 2.

Now moving to the top panel of Table 5, the 0-4 group's point estimates from the preferred specifications range between 0.09% and 0.17%. These results suggest a cumulative return for the period of 5.9%-10.9%. Four of these five estimates would be judged statistically significant at the 10% level and the columns (3) and (6) estimates would pass more stringent tests. The estimated α from the fitting of equation (2) is precisely estimated and suggests a cumulative abnormal return of 13.8% in this period.

The Period 2 results are summarized in Figure 3 between the two vertical lines that denote the beginning and end of this period. Specifically, the figure continues the plot of the cumulative abnormal returns from the estimation of the column (2) specification. Overall, the Period 2 results generally support the possibility that there were positive surprises about the fraction of 0-4 firms that would file and/or the revealed financial position of these firms in Period 2. There is little evidence of abnormal excess returns among the other groups.

6.4 Firm-Level Event Study of Initial Filing

To provide additional evidence on whether shareholders valued the 1964 Amendments, we next implement a firm-level event study of the effect of the final resolution of compliance uncertainty. Specifically, we test whether firms that registered under the 1964 Amendments had abnormal excess stock returns in the weeks that news of their registration became known to market participants.[35]

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[35] The 0-4 and 0-0 firms were the only ones that technically could "register" with the SEC, because the 2-2 and 2-4 firms had already filed their registration statements. However, the *SEC News Digest* also published the exact date

We assume that after the passage of the 1964 Amendments, the market's expectation of any individual firm registering with the SEC was between zero and one, and that this probability then increased to one upon news of actual registration.[36] This event-study analysis of the final resolution of compliance uncertainty has the important advantage that registration due dates differ across firms based on their fiscal year end.

To implement this test, we collected the exact date that the SEC considered the complying firms in our sample to have fulfilled the registration requirement from the daily issues of the *SEC News Digest*. The SEC designated a firm as having fulfilled the registration requirement 60 days after the issuer had filed its registration statement.[37] This delay means that the news of a firm's registration (or impending registration) with the SEC may have become known to market participants at any point between its announcement in the *SEC News Digest* and the preceding 60 days.[38]

We used this information to implement a firm-level event study of the effect of registration. Specifically, we estimate a firm-level version of equation (3) in Period 2 that is analogous to the column (2) specification in Table 5. The dependent variable is a firm's weekly return minus that week's average return for NYSE/AMEX returns of the size decile that the OTC firm would have belonged to at the beginning of 1963. The regression adjusts for the market return and the three other factors.

In this regression, the constant is replaced with an indicator that equals one during the period that news of a firm's registration became known in the marketplace and another indicator that equals one in weeks outside the event window for registrants and for all weeks for non-registrants. Due to the uncertainty surrounding the exact date that a firm's registration became known, the event window indicator is equal to one for 10 weeks. Specifically, it equals one for the eight weeks prior to the registration date through one week after the registration. Week zero in event time is the week of the registration. The event window is extended one week beyond the registration date to allow the information to disseminate. Thus, the event window indicator captures the variation in the data associated with the period between the SEC's receipt of a firm's registration materials

that the SEC considered 2-2 and 2-4 firms to be in compliance with the proxy and insider trading requirements. For brevity, we refer to both of these events as registrations.

[36] Even if the market had the correct expectations about the percentage of 0-4 firms that would comply with the law, it seems unlikely that the market had the correct expectations about *each* firm in the 0-4 group.

[37] Firms could request that the effective date of registration be accelerated. The SEC complied with these requests in numerous instances but comprehensive data on these cases is unavailable.

[38] The 60 day waiting period applied to firms filing their registration statements with the SEC and to firms complying with the proxy and insider trading requirements for the first time.

and one week after its official registration.[39]

Table 6 presents the estimation results. The standard errors are clustered by week to account for the likely covariance in unobserved returns across firms within a week. We report these results for the full sample of firms in these categories and a restricted sample that drops firms that were not required to register with the SEC in this period.[40]

The results provide striking evidence of positive abnormal excess returns for the 0-4 and 2-4 groups in the 10-week event window. The 0-4 firms have a positive abnormal return of 0.38% per week during this event window, or a cumulative return of 3.8%. This estimate would be judged statistically significant at conventional levels. The 2-4 firms experience a statistically significant positive abnormal return of 0.32% per week for a cumulative return of 3.2% during the event window. These results are modestly larger in the restricted samples presented in columns (2) and (4).[41]

The event window results are robust to alternative specifications.[42] For example, the results are nearly identical when the dependent variable is the difference in the weekly returns of the relevant firm and its matched 4-4 decile but there is no adjustment for the overall market or the three other factors.[43] In this respect, these findings are more robust than the overall Periods 1 and 2 results for the 0-4 and 2-4 firms that depended on adjustment for the four factors.

Figure 4 presents the 0-4 and 2-4 results graphically. We re-estimate the firm level equation but without the indicator variables displayed in Table 6. The average residuals are then calculated for

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[39] We had hoped to implement an analogous analysis for the firms that chose not to comply with the disclosure requirements. In these cases, the prediction is that confirmation that a firm would not register should lead to negative abnormal excess returns as P changes from the market's ex-ante estimate to zero. The practical difficulty with implementing this analysis is that we were not able to isolate the precise dates that this information became public. For example, it was not uncommon for the SEC to grant firms extensions that delayed their statutorily required registration date. We were unable to determine the identities of the firms that received these extensions.

[40] The restricted samples exclude firms that moved to the NYSE or AMEX and the few firms with between 500 and 750 shareholders that were not required to register with the SEC until 1966-1967.

[41] We also implemented the event study analysis for registrants in the 0-0 and 2-2 groups. For these groups, the standard errors on the event window indicators are so large that the point estimates have little empirical content. This imprecision is likely due to the relatively few filers (24 and 21, respectively) in these groups.

[42] The official registration dates for the 0-4 and 2-4 firms were distributed throughout Period 2. However, roughly half of them occurred in the 5 week period that began with the SEC's earliest filing deadline of April 30, 1965. The results are nearly identical when the firms with filing dates in this 5 week period are dropped. For example, the estimated parameters (standard errors) on the event week indicators are 0.520 (0.303) and 0.349 (0.144) for the 0-4 and 2-4 groups, respectively.

[43] When the firm-level version of equation (2) that adjusts for the market and three other factors is fit, the cumulative event window returns are 4.7% and 4.0% for the 0-4 and 2-4 registrants, respectively. Recall, this approach does not use the 4-4's as a comparison group.

each event week ranging from twenty weeks before registration through 10 weeks after registration.[44] These average residuals are considered the average abnormal return in a week, where the precise week is denoted by its distance from the registration date. The cumulative average abnormal returns are plotted against the event week. This is done separately for the 0-4 and 2-4 groups.

The figure provides an even more demanding test of the hypothesis that registration is associated with abnormal excess returns, because it is possible to observe the pre and post trends. The flat 0-4 and 2-4 lines between week -20 and week -9 reveal that there no abnormal excess returns in this 11-week period. The vertical lines denote the event window and during this period the cumulative abnormal excess return lines turn upward, graphically demonstrating the source of the results in Table 6. Equally important, these lines are flat from week 1 through week 10. Overall, the figure provides strong evidence that favorable resolution of registration uncertainty is rewarded by the market and helps to validate the Period 1 findings that the market valued compliance with the mandatory disclosure requirements.

Returning to Table 6, we also report the parameter estimate on an indicator variable that is equal to one outside the 10-week event window for registrants or filers and throughout Period 2 for nonfilers. First, consider the 0-4 results in column (1). The parameter estimates on this indicator variable for the remainder of the period is generally smaller than the comparable point estimate from column (2) of Table 5 (0.090 versus 0.122).[45] Moreover, it would not be judged statistically significant by conventional criteria. However, if it is taken literally, it provides some evidence of abnormal excess returns in Period 2 outside the event window for the 0-4 groups. This is consistent with the view that there were positive surprises about the fraction of 0-4 firms that would file and/or the revealed financial position of these firms in Period 2, though we are unable to distinguish between these two possibilities. Second, the 2-4 results indicate that the small positive estimate of alpha in column (2) of Table 5 is entirely due to the excess returns of filers during the event window.

We now turn to Table 7, which explores whether the abnormal excess returns in the event window vary with the size of the bid-ask spread at the beginning of the sample. Specifically, we divide firms into those with a bid-ask spread of greater and less than the median bid-ask spread of 9.2% in that week among 0-4 and 2-4 firms. We refer to them as "High Bid-Ask" and "Low Bid-Ask." Numerous theoretical studies have argued that bid-ask spreads reflect information asymmetry

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[44]The distribution of filing dates is such that virtually all filers have observations for each of these event weeks. This is not the case when the event window is extended in either direction.

[45]We also estimated a less-restrictive model where the effect of the 1(Remainder of Period 2) indicator is allowed to vary for firms that do and do not file in Period 2. We could not reject the hypothesis that these two parameter estimates are equal.

between insiders with private information and outside shareholders (see Madhavan (2000) for further background.).

We assume that high bid-ask spreads reflect a higher ex ante expected level of diversion. Thus, the prediction is that registration is more valuable for shareholders of these companies (because the expected reduction in diversion would be greater). A finding of greater event window returns for the high bid-ask firms would provide further evidence that shareholders valued the disclosure requirements.

Table 7 reports estimation results from the fitting of an equation that is nearly identical to one used in Table 6. The only differences are that we interact the 1(Period Between Filing and Registration) and 1(Remainder of Period 2) indicators with 1(High Bid-Ask), which is an indicator for whether the firm qualifies for the "High Bid-Ask" category. The coefficient on the interaction with the 1(Period Between Filing and Registration) provides a test of whether the abnormal excess returns differ for these firms.

The entries provide some evidence that high bid-ask firms were more rewarded for registration. Specifically, the 0-4 point estimate indicates that the average weekly abnormal excess return was 0.25% higher for the high bid-ask firms than low bid-ask ones during the event window. However, the parameter estimate has an associated t-statistic less than one so it is sensible to view this results as suggestive. In contrast, the 2-4 result (which is based on a larger number of firms) provides striking evidence that the event window returns are greater for the high bid-ask firms. In particular, these statistically significant results indicate that the cumulative return event window return for these firms was 5.6%. In contrast, the event window returns for the low bid-ask returns are much smaller and statistically insignificant.

Taken together, Tables 6 (and Figure 4) and 7 present further evidence that shareholders valued the 1964 Amendments' disclosure requirements. Here, the evidence is from firm-level variation in registration due dates and initial bid-ask spreads. These findings reinforce the validity of the view that the positive abnormal excess returns in Period 1 for the 0-4 firms are due to the Amendments.

6.5   Period 3

Recall, Period 3 is after the law has passed and the vast majority of new filers have registered with the SEC. Thus, there is essentially no new information about the law or about who will comply with its requirements during this period. We expect that the OTC groups will have zero abnormal excess returns. If this null hypothesis is rejected by the data, it raises the possibility that our research design is invalid, which would undermine the credibility of the results from Period 1.

Table 8 is structured identically to Tables 4 and 5 and reports these Period 3 results. The

table provides little evidence of abnormal excess returns. For all four of the OTC groups, the point estimates are generally small in magnitude (especially with adjustment for the market and the three other factors). Further, none of the 28 estimates would be judged to be statistically different from zero at the 10% level. Overall, the findings from this 58-week period support the validity of our research design and lend credibility to the hypothesis that the estimated effects in period 1 are due to the 1964 Amendments.

7 Summary and Interpretation

7.1 Summary

Here, we summarize the numerous tests of whether investors valued the mandatory disclosure requirements introduced by the 1964 Amendments that were presented in the previous section. The Period 1 results suggest that the 0-4 group had cumulative abnormal excess returns of 8.5-11% over these 85 weeks. In the context of the conceptual framework, these results suggest that prior to the 1964 Securities Acts Amendments diversion lowered the value of the 0-4 group firms by 8.5-11%. There is little evidence of abnormal excess returns for any of the three other OTC groups relative to their size-matched 4-4 groups, although the ordering of their estimated effects is consistent with our expectations.

In Period 2, there is evidence of further abnormal excess returns for the 0-4's. For these returns to be causally related to the 1964 Amendments, it is necessary to assume that at the beginning of the period the market had incorrect expectations about the fraction of firms that would file and/or their revealed financial position. In our view, it is plausible that the market may have had incorrect ex-ante expectations precisely because information about these firms was relatively scarce. Consequently, we present Table 9, which is structured identically to Tables 4, 5, and 8. It reports the results from the estimation of the same specifications, except they are fit on data from the 149 weeks that comprise Periods 1 and 2.

The preferred estimates of α for the 0-4 group from columns (2) through (6) range from 0.10% to 0.15%, which imply a cumulative abnormal excess return of 15-22% over the two periods. Notably, the longer panel improves the precision and all of these estimates have associated p-values less than 0.05.[46] The nulls of equality of the estimated α's for the 0-4 and 2-4, 0-0, and 2-2 groups can be

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[46]The estimates of the factor loadings (i.e., the β's) will be biased if the securities of OTC firms are more likely than those of NYSE/AMEX firms to be untraded between weekly price observations. In this case, the estimated α's are likely to be biased. We suspect that "stale" OTC prices are unlikely to be an issue, because *Barron's* only includes the most heavily traded OTC firms. Nevertheless, we also estimated models for the 2-week and 4-week returns where this issue is almost certainly irrelevant. The 0-4's estimated α (standard error) from specifications that

rejected at the 3% level in the firm-level GLS specification in column (6), suggesting that firms in the 0-4 group did significantly better than the firms in the other three OTC groups.[47]

Two other pieces of evidence support the view that investors valued the disclosure requirements. First, the event-study analyses present striking evidence that the shares of companies that registered with the SEC were bid-up by 3-4% upon the public release of this news. Further, these gains appear larger for a subset of companies for which ex-ante diversion was likely higher (proxied by bid-ask spreads). Second, we cannot reject the null of zero abnormal excess returns in Period 3 when there was no new information about the law or which firms would comply with its requirements.

Based on the varied evidence presented in this paper, we conclude that investors valued the mandatory disclosure requirements imposed on the 0-4 firms by the 1964 Amendments. We now try to put these numbers in some context. The midpoint of the range of cumulative abnormal excess returns in Period 1 for the 0-4 firms is about 10%. This implies that the 1964 Amendments created roughly $425 million (1963$) of value for shareholders of the 225 0-4 firms with non-missing market capitalization data. This is roughly $2.6 billion in 2003 dollars. If the Period 1 and 2 effects are both considered due to the Amendments, then the analogous figure is $4.8 billion (2003$). These numbers almost certainly understate the total increase in market capitalization associated with the legislation, because our sample only includes a quarter of the nearly 900 firms that registered with the SEC for the first time after passage of the 1964 Amendments.

In light of these numbers, it is natural to wonder why shareholders did not band together to force these OTC companies to raise capital publicly or move to the NYSE/AMEX so that they would be subject to these disclosure requirements (due to the 1933 and 1934 Acts). The most likely explanation is that the costs of coordination and/or the contracting costs must have exceeded these increases in market capitalization. We cannot test this explanation directly, but we note that the SEC's *Special Study* painted a picture of corporate governance at OTC firms that clearly favored managers and other insiders. Recall, the identity of the members of the board of directors and details about managements compensation were frequently withheld from outside shareholders.

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use the size-matched 4-4's as controls and adjust for the market and three factors are 0.183 (0.082) and 0.375 (0.115) for the 2- and 4-week returns, respectively. When these estimates are divided by two and four, it is evident that they are nearly identical to the column (2) estimates. Thus, we conclude that our results are not due to stale OTC prices.

[47]To compare the abnormal returns across groups, we stacked the data for the four OTC groups and estimated a pooled version of equation (3) that allows the factor loadings to vary by group. In the case of the portfolio-level specification from column (2), the estimates are less precise and these same nulls cannot be rejected at conventional significance levels.

7.2 Interpretation

We now discuss the internal and external validity of our results. With regards to internal validity, there are a few issues that merit highlighting. First, the estimated α's will be downward biased if we failed to collect stock split and dividend information for all OTC companies in the sample. The Data Appendix describes how we tried to safeguard against this possibility. Second, the Period 1 (and Period 2) unadjusted and adjusted results differ. In particular, there is little difference between the raw returns of the 0-4 group and its size-matched 4-4 group. The differences in their returns emerge after the adjustment for the market return and three other factors. Thus, the validity of these findings rest on the validity of this model for stock returns. In contrast, the event study results and the 0-4's higher returns relative to the other OTC groups are evident with and without factor adjustment.

Third, our findings are broadly consistent with previous research. Other studies have found large effects of "improved behavior by insiders". For example, takeover premiums are typically substantial and the benefits of trading on inside information have been shown to be quite large (see, for example Seyhun (1986) and Meulbroek and Hart (1997)).

To the best of our knowledge, Ferrell (2004) is the only other study of the consequences of the 1964 Amendments. That paper uses a 3-factor model and finds a monthly abnormal return of 0.35% during 1963 for a sample of OTC firms. If this estimate is applied to the roughly 20 months of our Period 1, it would imply a cumulative abnormal return of approximately 7%. This figure is in between the cumulative abnormal returns of the 2-4 and 0-4 groups in our Period 1 (which includes all of 1963, plus nearly 8 months of 1964). However, there are a number of methodological differences that make it difficult, if not impossible, to compare the results in a meaningful manner. Perhaps, the most important one is that Ferrell (2004) does not divide the OTC firms into those that had and had not previously registered with the SEC, nor into those above and below the size cutoffs for the 1964 Amendments. In contrast, the division of the OTC firms into the 0-4, 2-4, 0-0, and 2-2 groups is a key feature of our analysis.[48]

Fourth, we considered studying alternative outcome variables to determine the mechanism for the increase in stock returns. For example, the increased provision of information due to the manda-

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[48] Ferrell (2004) reports that his sample is drawn from the Primary and Eastern tables in the OTC section of *Barron's*. In contrast, our sample also includes firms from the Supplemental table. In our sample, roughly 75% of the Primary and Eastern firms had registered with the SEC prior to the passage of the 1964 Amendments so we suspect that Ferrell (2004)'s sample is primarily comprised of 2-2 and 2-4 firms. Other differences between the studies include: the papers divide the periods in different ways; Ferrell (2004) *appears* to fail to assign exit returns to firms that drop out of *Barron's* or to follow the ones that move to the NYSE/AMEX; Ferrell (2004)'s comparison group of exchange firms is not size matched; and our collection of the exact registration date allows for the event-study tests in this paper.

tory disclosure requirements might affect firms' future stream of dividends and/or the liquidity or volatility of their shares. The attrition from our sample and short length of our panel make it impossible to conduct a meaningful test of whether dividends increased after the 1964 Amendments were in force.[49] The relatively short length of our panel also makes it difficult to test for changes in liquidity, as measured by bid-ask spreads because increased information may only gradually affect bid-ask spreads. This is further complicated by the movement of many OTC firms to the NYSE and AMEX where separate bid and ask prices are not available. Finally, Ferrell (2004) finds evidence of a reduction in volatility among OTC firms but any conclusions must be tempered by the same concerns about sample attrition that would undermine an analysis of dividends. Overall, we conclude that the available data files do not allow for a thorough examination of the specific sources of the increase in stock returns.

We now assess whether our results can be applied to other contexts (i.e., their external validity). The policy question that motivated this analysis is whether mandatory disclosure laws are effective at reducing diversion. Recall, evidence of positive abnormal returns is a necessary but not sufficient condition for this to be the case. Thus, these results are consistent with the possibility that these laws can reduce diversion.

The estimated effect, however, may differ from the "average treatment effect" when mandatory disclosure laws are applied in a market where no firms were previously required to disclose.[50] This is because the OTC groups are comprised of firms that had chosen to incur costs to avoid the disclosure requirements. Specifically, these firms gave up opportunities for access to new capital through public offerings and/or the greater liquidity of the NYSE/AMEX to avoid triggering the disclosure requirements. Hence, our estimates should be considered an estimate of the "treatment on the untreated".

The treatment on the untreated effect could be larger or smaller than the more general average treatment effect. On the one hand, treatment on the untreated might overstate the marketwide benefits of disclosure, because the firms that chose disclosure voluntarily before 1964 (e.g. by listing on the NYSE/AMEX or making a public offering and thereby subjecting themselves to the 1933 and 1934 Acts) are likely to be ones where the managers saw relatively little opportunity for diversion and therefore had little to lose if they disclosed. On the other hand, if managers also hold a large amount of stock in their own companies, the ones who chose disclosure voluntarily might be

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[49] Recall, attrition is unlikely to pose a substantial problem for calculating stock returns in our sample, because we were generally able to assign exit returns.

[50] See Angrist (1998), Heckman (2001), and Rubin (1977) for discussions of the "average treatment effect", "treatment on the untreated", and related issues.

precisely the ones whose companies' market capitalization would benefit the most from mandatory disclosure. In this case, the returns to disclosure among the firms that were not subject to the full disclosure requirements prior to 1964 would be lower than the average returns.

It is also important to highlight that the estimates may not be applicable to settings where financial market institutions have advanced beyond those that prevailed in the U.S. in the early 1960s. For example, the results may not be useful for making predictions about the likely consequences of the recent Sarbanes-Oxley Act in the U.S. It is more likely that they are informative about the consequences of mandatory disclosure laws in financial markets at a stage of development similar to the OTC market in the 1960s. This could include relatively illiquid markets in the U.S. (such as the one studied by Bushee and Leuz (2005)) or markets in other countries.

8   Conclusion

We analyzed the effects of the 1964 Securities Acts Amendments, which were the last major imposition of mandatory disclosure requirements in US equity markets. This legislation extended the requirements to provide audited financial reports, informative proxies, and reports on insider holdings and trades to large firms traded OTC. We showed that firms newly required to make all these types of disclosure had a statistically significant abnormal excess return of about 10% during the year and a half that the law was debated and passed relative to a comparison group of unaffected firms and after adjustment for the standard four-factor model. Furthermore during this period, these OTC firms outperformed OTC firms who only had to begin complying with the proxy and insider trading rules, while small OTC firms had the lowest returns. In addition, a firm-level event study analysis demonstrates that complying OTC firms had abnormal excess returns of about 4% in the weeks immediately surrounding the announcement that they would comply with the new disclosure requirements. Overall, this paper's findings support the hypothesis that mandatory disclosure laws can be an effective means for curtailing diversion by insiders. However the precise welfare consequences are unknown, because we cannot determine how much of shareholders' gains were a transfer from the insiders of these same companies. These results should cause policy makers to question the basis of recent calls to repeal US federal mandatory disclosure requirements.

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9   Data Appendix

9.1   Quality Assurance

Data entered from *Barron's* were hand checked and (if necessary) corrected by research assistants in the United States in any case where the bid price exceeded the ask price, a bid or ask price was not quoted in eighths or the percentage difference between the bid and ask price was large.

To avoid spurious exits from *Barron's* and incorrect matches of firms across weeks, we used computer algorithms to compare and match firm name strings (as entered from *Barron's*) across weeks and flag cases where hand checking was needed due to complicated abbreviation changes. We also looked for large changes in the bid and ask prices between *Barron's* issues. Research assistants in the United States investigated the roughly 500 largest weekly changes in split-adjusted prices. These investigations included rechecking the *Barron's* entries and the stock split information, as well as verifying the match between firm names across issues of *Barron's*. Any documented matching errors were corrected. Otherwise, the observation was left unchanged.

9.2   Sample selection

Firms dropped:

The *Barron's* issue for the first week of 1963 lists 1,752 firms. Overall, our sample selection criteria reduces the number of firms used to 1,182. The list below outlines the reasons for dropping firms and how many firms are dropped due to each criteria. The criteria were applied in the sequential order that follows.

(a) (130 firms) We drop preferred stocks and B stocks because these may be differentially affected by the law, along with a small set of firms whose names are abbreviated or change abbreviation over time in a way that make it infeasible to determine which abbreviation refers to which firm in a particular week.

(b) (318 firms) We drop banks and insurance companies because they are regulated by multiple agencies, because the 1933, 1934, and 1964 Acts all treated one or both of these groups differently from other firms, and because market expectations about disclosure requirements for these groups during Period 1 were quite different than for other firms. We classify a firm as a bank or an insurance company if it appears in *Barron's* in the separate sections for banks or for insurance companies, or if it appears in *Barron's'* general lists but is assigned an SIC code 60 (Depository Institutions), 61 (Non-depository Credit Institutions), 63 (Insurance Carriers) or 64 (Insurance Agents, Brokers, and Service). For firms that file with the SEC in any year between 1962 and 1967 we obtain SIC codes from the SEC's *Directory of Companies Filing Annual Reports*. For firms not

in any of these SEC publications, we assign SIC codes based on reading firm descriptions in the 1963 *Moody's* Manuals.

(c) (2 firms) We drop firms with firm name abbreviations that make it impossible to determine the firm's filing status from the *Directory of Companies Filing Annual Reports*.

(d) (4 firms) For four firms, the *Standard and Poor's Dividend Record* had incomplete/ incomprehensible information about dividends or splits in one or more years. These firms are dropped.

(e) (49 firms) We drop firms who appear in neither the 1962 *Standard and Poor's Dividend Record* nor the 1963 *Moody's* Manuals (these *Moody's* Manuals generally refer to fiscal years ending in 1962). There is a risk that such firms do not publicly disclose earnings and dividends with resulting biases in returns calculated without this information.

(f) (67 firms) We drop firms who have a price less than \$2 in the first *Barron's* issue of 1963. Such firms have very low probability (around 30 percent) of still appearing in *Barron's* by the end of 1966. Dropping these firms from the sample makes our results less sensitive to the exact approach used for dealing with firms that exit *Barron's*.

Observations dropped:

We implement the following rules to limit the potential influence of data entry or data processing errors. Rules (a) and (b) address possible typos in a bid or ask price. Rule (c) addresses cases where Barron's or we may have entered the bid and ask price for an incorrect firm for a particular week. Rule (d) addresses extreme returns, while rule (e) addresses cases where a firm is missing from *Barron's* for a series of weeks but then re-appears in the *Barron's* listings.

(a) Bid price>Ask price: Observations where the bid price listed in *Barron's* is larger than the ask price are dropped because such cases likely result from typos by *Barron's* or in our data entry. Observations where *Barron's* list only a bid or an ask price are dropped because the average of the bid and ask (used for the calculation of returns) cannot be calculated.

(b) Bid or ask outlier: To further address likely typographical errors in the data we drop observations where the bid price is deemed to be an outlier (typo) but the ask price is not, and conversely. We classify the bid price to be an outlier if the absolute value of the one-week capital gain calculated based on the bid price exceeds 50 percent while the two-week capital gain calculated based on the bid price is below 10 percent (the same classification used for ask prices).

(c) Bid and ask outlier: To address the possibility that we or *Barron's* entered the wrong line of information for a particular firm in a particular week, we drop return observations where the week $t - 1$ or week t bid and ask prices are deemed to be a mis-entry. Such mis-entries are defined as cases where the resulting one-week return exceeds 50 percent in absolute value while the two-week return is below 10 percent.

(d) Extreme returns: We drop observations with weekly returns above 200 percent under the presumption that most of these result from typos not caught by our above drop criteria.

(e) In cases where a firm is missing from *Barron's* (or is in *Barron's* but with missing price quotes) over a number of weeks and then reappear, we do not calculate a return for the week of the reappearance. This is done because firms may be more likely to reappear after good returns or after bad returns. Returns prior to the reappearance and for the week of the reappearance are set to missing. In cases where the firm only reappears in the following calendar year or later we do not use any of the data after the reappearance because firms who are not covered for a long period of time but then reappear may be systematically different from those who do not reappear.

For comparability, we apply rules (d) and (e) to the NYSE/AMEX dataset as well. Bid/ask spreads are not available for listed firms, so we cannot apply rules (a)-(c) for those firms.

9.3 Procedures for firms that exit *Barron's*

Appendix Table 1 summarizes our treatment of firms that exit *Barron's*, change names, or are involved in mergers. In cases of firms that move to the NYSE/AMEX, change names or are involved in mergers, we continue the time series of returns whenever possible. In cases of liquidations, exits from *Barron's* for no apparent reason, or prolonged periods of missing information in *Barron's*, we assign an exit return much in the same way that the Center for Research in Securities Prices (CRSP) assign delisting returns to firms that exit their NYSE/AMEX data set. The exit return is assigned to the first week where post-exit information is available and we assign zero returns in the weeks between the last *Barron's* price and the exit return. For comparability we use the same timing convention when assigning delisting returns in CRSP for NYSE/AMEX firms. Returns for weeks following the exit and prior to the week for which we have an exit return are set to zero.

To prevent long string of zeros, which could bias our estimates of factor loadings in the regressions, we do not use exit information when such information is only available for weeks more then 20 weeks past the exit. This also insures that results are not affected by censoring in the sense that information many months out may only be available for a non-representative sample of exiters. For all weeks subsequent to the exit return, we assign a missing return. This is equivalent to assuming that the missing firms' returns are equal to the mean return of the remaining firms in their respective OTC group (i.e., 0-4, 2-4, 0-0, and 2-2).

More specific information on our approach in certain situations follows. The letters below correspond to groups in Appendix Table 1.

(a) Firms that exit *Barron's* and move to the NYSE or AMEX: We use the CRSP NYSE/AMEX files to determine which of the firms that stop being listed in *Barron's* Over-the-Counter section do

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so because they have moved to the NYSE or AMEX. The return for the week the firm first appears in CRSP is calculated using the first CRSP price and the last *Barron's* price, and information on dividends and stock splits from the *Standard and Poor's Dividend Record*. In over 90 percent of the cases the firm appears in CRSP in the first week after exiting from *Barron's*. In a few cases there is a one week gap between the *Barron's* exit and the first appearance in CRSP. The return for this week is set to zero. In a few other cases, *Barron's* lists prices for a few weeks following the appearance in CRSP. We use the CRSP prices to calculate returns for these weeks. In weeks following the first week of the CRSP appearance, we calculate weekly returns based on CRSP's information on prices, dividends, and stock splits. For simplicity, we calculate weekly returns in CRSP based on the daily returns provided (this allows for an intra-week return on any dividends paid but we confirmed that any resulting bias from this is minuscule by alternatively calculating returns using the prices, dividends, and splits directly).

(b) Firms that change names: Name changes are identified using the *National Stock Summary* and the *Directory of Obsolete Securities*. When *Barron's* continues coverage of the firm under the new name we are able continue the time series of returns for the firm. When the new firm name does not appear in *Barron's* we assign, when possible, an exit return based on the first post-exit price found in the *National Stock Summary* and dividend and stock split information from *Standard and Poor's Dividend Record*. The exit return is assigned to the week of the *NSS* price. Weeks between the exit from *Barron's* and the *NSS* price are assigned a return of zero.

(c) Firms involved in mergers: Mergers are identified using the *National Stock Summary* and the *Directory of Obsolete Securities*. When the acquirer is in *Barron's* or on the NYSE/AMEX we are able continue the time series of returns for the firm. Otherwise we assign an exit return whenever possible, based on the first post-exit price found in the *National Stock Summary* and dividend and stock split information from *Standard and Poor's Dividend Record*. The exit return is assigned to the week of the *NSS* price. Weeks between the exit from *Barron's* and the *NSS* price are assigned a return of zero. When merger terms are unavailable, we set the return for the merger week to missing. In cases of acquisitions for cash, we assign an exit return and do not continue the time series.

(d) Firms that are liquidated: Liquidations are identified using the *Directory of Obsolete Securities* and *Standard and Poor's Dividend Record*. When possible, we assign exit return based on the first post-exit price found in the *National Stock Summary* and dividend and stock split information from *Standard and Poor's Dividend Record*. The exit return is assigned to the week of the *NSS* price and weeks in between the exit from *Barron's* and the *NSS* price are assigned a return of zero.

(e), (f) Firms that exit *Barron's* for no apparent reason: Appendix Table 1 splits these firms

into those who exit with a last price above two dollars and those who exit with a last price of two dollars or less. The latter category is larger suggesting that *Barron's* tend to drop coverage of firms with very low prices. When possible, we use the procedures in (d) to assign an exit return.

(g) Firms for which we discontinue the return series due to long periods of missing information in *Barron's*: It is possible that *Barron's* selectively reintroduces firms (i.e., starts providing prices again) based on performance and this could introduce a bias in any analysis. To prevent substantial biases from this possibility, we discontinue the return series for a particular firm if a gap of missing prices or an omission of a firm extends into the following calendar year. In these cases, we assign an exit return in the same way as in (d)-(f).

9.4 Dividend Data

Our primary source for dividends and stock splits was *Standard and Poor's Annual Dividend Record*. This publication aims to be a "record of dividend payments on virtually every American and Canadian preferred and common stock." The average number of firms covered in this publication during the 1961-68 period was 10,000. There were roughly 2,000 firms on the American and New York Stock Exchanges in these years, so approximately 80% of the entries were for OTC (and Canadian) firms. Approximately 75% of our 1182 OTC firms were in the 1962 S&P book. We entered the amounts and dates of every cash, property, and liquidating dividend and stock split for each of the OTC firms in the sample. When necessary, we used the *National Stock Summary* and the *Directory of Obsolete Securities* to verify dividends.

We dropped 49 firms that appeared *Barron's*, but appeared in neither the 1962 *Standard and Poor's Dividend Record* nor the 1963 Moody's Manuals. There is a risk that such firms do not publicly disclose earnings and dividends. For the vast majority of remaining firms not in the 1962 S&P book we were able to use the Moody's Manuals to verify that no dividends or splits had taken place in 1962 or confirm that the firms were included in the 1963 S&P book that covers the dividends for the first year of our analysis.

9.5 Assignment to OTC Groups

Our OTC group classifications are based on asset and stockholder characteristics as of the start of 1963 (for each firm this is based on the Moody's Manual that contains the information for the 1962 fiscal year end) and the 1963 *Directory of Companies Filing Annual Reports with the SEC Under the Securities Exchange Act of 1934* (the *"Directory"* below).

The *Directory's* list is as of July of the year of the publication. We assume that the list covers all firms filing during the previous year and thus use the 1963 *Directory* to classify our OTC

groups, with the exception that we classify firms that appear in the 1963 *Directory* but (a) went to NYSE/AMEX in the first half of 1963 and (b) did not appear in the 1962 *Directory* as initial non-filers (i.e. as 0-4 or 0-0 firms).

If a firm lists on the NYSE/AMEX or merges with a filing firm before mid-1963 then we count it as a July 1963 filer in Panel B of Table 2.

Table 1

Key Dates Associated with the Securities Acts Amendments of 1964
and with Research Design

1. November 28, 1961: Chairman Cary said the SEC would advocate new powers for the agency including subjecting OTC securities to the same rules as applied to those listed on exchanges.

2. January 1, 1963: Beginning of "Period 1" of our empirical analysis.

3. April 3, 1963: The SEC released the first part of the Special Study. It recommended imposing exchange disclosure rules on OTC securities.

4. July 17, 1963: The SEC released second part of Special Study, which recommended major overhaul of OTC market.

5. July 30, 1963: The Senate passed the bill extending disclosure rules to OTC firms.

6. February 6, 1964: President Johnson focused on the SEC's proposed legislation in a "Special Message."

7. August 5-6, 1964: House and Senate passed the bill. President Johnson signed the bill.

8. August 24, 1964: End of Period 1 and Beginning of Period 2 of our analysis.

9. April 30, 1965: Deadline for filing registration statement with SEC for newly covered firms with at least $1 million of assets and 750 shareholders if they had a fiscal year end between July 1 and December 31 of 1964. (Deadline was 120 days after fiscal year end for firms with a fiscal year ending between January 1, 1965 and June 30, 1965 and it was 120 days after first fiscal year end after July 1, 1966 for firms with at least $1 million of assets and 500 shareholders.)

10. October 31, 1965: Last deadline for filing registration statement with SEC for newly covered firms (those with fiscal years ending June 30). End of Period 2 and Beginning of Period 3 of our analysis is November 15, 1965.

Table 2

OTC Sample Firm Counts By Groups Defined Based on 1963 Filing Status and Size, 1963-1966

A. Sample sizes

Group	Number of firms					% in sample
	63 week 1	64 week 1	65 week 1	66 week 1	66 week 52	at end of 1966
0-4	228	212	195	185	173	75.9
2-4	723	696	659	619	599	82.8
0-0	134	111	96	86	74	55.2
2-2	97	88	78	69	65	67.0
4-4 (NYSE/AMEX)	1876	1818	1757	1695	1633	87.0
4-4, decile 10 (largest)	187	187	187	187	187	100.0
4-4, decile 9	188	186	183	181	180	95.7
4-4, decile 8	187	185	180	177	174	93.0
4-4, decile 7	188	181	177	171	165	87.8
4-4, decile 6	188	181	174	167	158	84.0
4-4, decile 5	187	182	174	171	161	86.1
4-4, decile 4	188	178	170	159	148	78.7
4-4, decile 3	187	182	176	167	159	85.0
4-4, decile 2	188	180	171	161	154	81.9
4-4, decile 1 (smallest)	188	176	165	154	147	78.2

B. Percent of Firms Filing with the SEC, by OTC Group and Year

Group		Percent of Firms Present in OTC sample in first week of 1963 who file with SEC as of July of				
		63	64	65	66	67
0-4		8.3	13.6	79.4	81.6	77.6
2-4	Filing 2 or 4 types of information	100	98.6	96.7	93.8	88.7
	Filing 4 types of information	4.8	16.6	67.9	77.9	79.7
0-0		6.7	10.5	29.1	34.3	39.6
2-2	Filing 2 or 4 types of information	100	97.9	92.8	89.7	82.5
	Filing 4 types of information	0	4.1	22.7	33.0	49.5

Note: All firms tabulated in the OTC and NYSE/AMEX groups are present in their respective samples as of the first week of 1963. The median (mean) market capitalization deciles of the 0-4 and 2-4 groups had they been traded on NYSE/AMEX is 3 (3.36) and 3 (3.74), respectively. For the 0-0 and 2-2 groups, market capitalization is frequently not available. We use the smallest two NYSE/AMEX deciles as comparison group for these firms (see text for further motivation of this choice). NYSE/AMEX firms tabulated in Panel A exclude firms that enter from the Barron's sample during the 63-66 period. Panel B reports the percent of the firms that were in the respective groups as of the first week of 1963 that file with the SEC as of July of the relevant year. See the text and Data Appendix for further details.

Table 3. Firm Characteristics by Mandatory Disclosure Groups, 1962

	0-4		2-4		0-0		2-2	
	Sample	Mean (Med.)	Sample	Mean (Med.)	Sample	Mean (Med.)	Sample	Mean (Med.)
	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)	(3a)	(3b)
# Firms	228	–	723	–	134	–	97	–
Information from Barron's for 1963, week 1								
Share Price	228	$20.1 ($13.1)	723	$17.2 ($13.2)	134	$9.4 ($4.3)	97	$6.2 ($4.4)
Bid-Ask Spread ($)	228	$1.749 ($1.25)	723	$1.407 ($1.125)	134	$1.028 ($0.75)	97	$0.804 ($0.75)
Bid-Ask Spread (%)	228	10.0% (11.0%)	723	9.8% (9.1%)	134	16.5% (17.1%)	96	15.3% (14.6%)
Information from Moody's for 1962								
# Shareholders	218	3,269 (1,878)	677	4,871 (2,326)	13	484 (389)	15	486 (407)
Assets	228	$32.8 ($12.3)	723	$34.3 ($14.9)	108	$3.9 ($1.3)	91	$3.2 ($2.3)
Market Cap.	225	$19.0 ($9.0)	719	$92.8 ($10.6)	33	$3.8 ($1.7)	44	$2.5 ($2.4)
Book Value of Assets	153	$15.5 ($6.9)	574	$16.1 ($7.5)	13	$2.0 ($1.6)	23	$3.3 ($1.9)
Net Income	225	$2.0 ($0.7)	715	$1.6 ($0.8)	105	$0.1 ($0.1)	91	$0.2 ($0.2)
Sales	191	$43.9 ($15.3)	655	$33.6 ($17.2)	102	$3.9 ($2.2)	84	$4.8 ($2.9)
Director Names Published	222	– 97.4%	716	– 99.0%	31	– 23.1%	41	– 42.3%
Stock Options Used Published	93	40.8%	443	– 61.3%	12	– 9.0%	21	– 21.6%
Year of Incorporation	226	1926.9 (1930)	722	1936.4 (1945)	103	1948.2 (1953)	90	1951.5 (1954)

All dollar figures are in millions, except per share data. All financial data are for 1962. "Mean" ("Median") is the mean of each variable for those observations where the variable is available.

Table 4

Average Abnormal Excess Returns

Period 1, January 1963 – August 24, 1964

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
0-4							
$\alpha_{period\,1}$ (%)	0.079	0.101	0.128	0.102	0.113	0.124	0.202
	(0.067)	(0.066)	(0.068)	(0.066)	(0.067)	(0.054)	(0.077)
R-Squared	0.064	0.173	0.185	0.209	0.167	0.006	0.490
2-4							
$\alpha_{period\,1}$ (%)	0.017	0.038	0.068	0.093	0.057	0.081	0.129
	(0.058)	(0.063)	(0.064)	(0.098)	(0.062)	(0.057)	(0.082)
R-Squared	0.021	0.107	0.110	0.255	0.065	0.002	0.580
0-0							
$\alpha_{period\,1}$ (%)	-0.040	-0.094	-0.099	-0.008	0.026	-0.090	0.092
	(0.128)	(0.137)	(0.143)	(0.174)	(0.146)	(0.120)	(0.135)
R-Squared	0.029	0.071	0.053	0.039	0.096	0.001	0.207
2-2							
$\alpha_{period\,1}$ (%)	-0.146	-0.111	-0.167	-0.060	0.031	-0.141	0.075
	(0.153)	(0.160)	(0.160)	(0.202)	(0.165)	(0.127)	(0.174)
R-Squared	0.000	0.009	0.015	0.127	0.027	0.000	0.201
Factor Model	Market	4 Factors	4 Factors	4 Factors	4 Factors	4 Factors	4 Factors
Comparison Group	4-4	4-4	4-4	4-4	IM 4-4	4-4	None (eq. 2)
Buy and Hold	No	No	Yes	Yes	No	No	No
Value Weighted	No	No	No	Yes	No	No	No
Firm-Level GLS	No	No	No	No	No	Yes	No

Notes: The entries in columns 1-5 are the parameter estimates and heteroscedasticity-consistent standard errors (in parentheses) on the constant from the estimation of versions of equation (3). Column 6 is similar, except that an observation is a firm-week and observations are weighted by the inverse of the standard deviation of a firm's return for the first twelve weeks of 1963. Column 7 is based on estimates of equation (2). Bold-face panel headings denote groups and the specification details are at the bottom of the table. "IM 4-4" = Industry-Matched 4-4 Comparison Group. In all columns except (6), the sample size is 84, but it is based on 85 calendar weeks. Due to the lack of comparability between the OTC and NYSE/AMEX returns in the week of Kennedy's assassination, we drop prices from that week and treat the returns from the week before the assassination to the week after as a single observation. In column 6, the sample sizes are 17,987 for group 0-4, 58,719 for group 2-4, 9,608 for group 0-0, and 7,499 for group 2-2.

Table 5

Average Abnormal Excess Returns

Period 2, August 25, 1964 – November 15, 1965

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
0-4							
$\alpha_{period\,2}(\%)$	0.066	0.122	0.171	0.092	0.138	0.154	0.215
	(0.079)	(0.073)	(0.080)	(0.066)	(0.077)	(0.062)	(0.075)
R-Squared	0.026	0.264	0.229	0.243	0.221	0.007	0.705
2-4							
$\alpha_{period\,2}(\%)$	-0.024	0.033	0.055	-0.292	0.048	0.055	0.119
	(0.060)	(0.053)	(0.061)	(0.250)	(0.049)	(0.051)	(0.058)
R-Squared	0.038	0.226	0.194	0.069	0.157	0.004	0.790
0-0							
$\alpha_{period\,2}(\%)$	-0.057	-0.009	-0.143	-0.192	0.063	-0.019	0.145
	(0.135)	(0.138)	(0.205)	(0.185)	(0.140)	(0.117)	(0.121)
R-Squared	0.002	0.074	0.034	0.124	0.083	0.002	0.544
2-2							
$\alpha_{period\,2}(\%)$	-0.077	-0.017	0.109	0.039	0.018	-0.021	0.137
	(0.146)	(0.150)	(0.159)	(0.191)	(0.151)	(0.164)	(0.143)
R-Squared	0.009	0.032	0.008	0.077	0.035	0.001	0.524
Factor Model	Market	4 Factors	4 Factors	4 Factors	4 Factors	4 Factors	4 Factors
Comparison Group	4-4	4-4	4-4	4-4	IM 4-4	4-4	None (eq. 2)
Buy and Hold	No	No	Yes	Yes	No	No	No
Value Weighted	No	No	No	Yes	No	No	No
Firm-Level GLS	No	No	No	No	No	Yes	No

Notes: The entries in columns 1-5 are the parameter estimate and heteroscedasticity-consistent standard error (in parentheses) on the constant from the estimation of versions of equation (3). Column 6 is similar to the estimates of equation (3), except that an observation is a firm-week and observations are weighted by the inverse of the standard deviation of a firm's return for the first twelve weeks of 1963. Column 7 is based on estimates of equation (2). The group is denoted in the bold-face panel headings and the specification details are reported at the bottom of the table. "IM 4-4" = Industry-Matched 4-4 Comparison Group. The sample size is 64 weeks, except in column 6 where it is 12,059 for group 0-4, 40,982 for group 2-4, 5,869 for group 0-0, and 4,655 for group 2-2.

Table 6

Firm Level Analysis of SEC Registration During Period 2

	0-4 − 4-4		2-4 − 4-4	
	(1)	(2)	(3)	(4)
1(Period Between Filing and Registration)				
	0.381	0.436	0.316	0.345
	(0.151)	(0.156)	(0.098)	(0.101)
1(Remainder of Period 2)				
	0.090	0.051	0.003	0.007
	(0.075)	(0.079)	(0.052)	(0.067)
Firms	199	152	671	445
Firms Who Have Registration Date	128	122	388	353
Observations (Firm-Weeks)	12,059	9,144	41,027	26,904
R-Squared	0.004	0.005	0.002	0.004
Full Sample	Yes	No	Yes	No
Restricted Sample	No	Yes	No	Yes

Notes: The entries report the results from firm level regressions. All specifications are adjusted for the overall market return, the two Fama-French factors and a momentum factor. The indicator variable 1(Period Between Filing and Registration) equals 1 for observations on firm returns between the 8 weeks before registration and the 1 week after registration (inclusive). The indicator 1(Remainder of Period 2) equals 1 for observations from all other weeks in Period 2 for firms that register in Period 2 and equals 1 for all weeks for firms that do not register in this period. The full sample includes all 0-4 or 2-4 firms. The restricted sample deletes all observations on firms that do not have 750 or more shareholders in 1962 (since such firms should not file in Period 2) or that switched to the AMEX or NYSE in Periods 1 or 2 and thus were not candidates for filing under the 1964 Amendments. Clustered standard errors, allowing for correlation across firms within weeks, are in parentheses. See the text for further details.

Table 7

Firm Level Analysis of SEC Registration During Period 2, By Initial Bid-Ask Spread

	(0-4) − (4-4)	(2-4) − (4-4)
	(1)	(2)
1(Period Between Filing and Registration)		
	0.252	0.124
	(0.194)	(0.082)
1(Period Between Filing and Registration) * 1(High Bid-Ask)		
	0.251	0.436
	(0.301)	(0.180)
1(Remainder of Period 2)		
	0.009	-0.009
	(0.073)	(0.059)
1(Remainder of Period 2) * 1(High Bid-Ask)		
	0.068	0.025
	(0.066)	(0.075)
R-Squared	0.004	0.003
Firms	199	671
Firms Who Have Registration Date	128	388
Observations (Firm-Weeks)	12,059	41,027

Notes: See the notes to Table 6 and text for details.

Table 8

Average Abnormal Excess Returns

Period 3, November 16, 1965 through end of 1966

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
0-4							
$\alpha_{period\ 3}$ (%)	-0.128	-0.010	0.004	-0.080	0.014	-0.021	0.077
	(0.093)	(0.079)	(0.119)	(0.103)	(0.095)	(0.073)	(0.085)
R-Squared	0.339	0.646	0.562	0.649	0.463	0.021	0.901
2-4							
$\alpha_{period\ 3}$ (%)	-0.108	-0.023	0.021	-0.034	-0.024	-0.052	0.066
	(0.081)	(0.075)	(0.088)	(0.160)	(0.071)	(0.068)	(0.072)
R-Squared	0.376	0.593	0.586	0.756	0.397	0.018	0.938
0-0							
$\alpha_{period\ 3}$ (%)	0.053	0.113	0.094	0.127	0.123	0.014	0.244
	(0.197)	(0.218)	(0.242)	(0.261)	(0.225)	(0.187)	(0.192)
R-Squared	0.084	0.123	0.138	0.262	0.151	0.017	0.664
2-2							
$\alpha_{period\ 3}$ (%)	-0.074	-0.116	-0.077	-0.010	-0.091	-0.186	0.016
	(0.182)	(0.162)	(0.190)	(0.241)	(0.150)	(0.150)	(0.160)
R-Squared	0.068	0.102	0.041	0.245	0.219	0.004	0.743
Factor Model	Market	4 Factors	4 Factors	4 Factors	4 Factors	4 Factors	4 Factors
Comparison Group	4-4	4-4	4-4	4-4	IM 4-4	4-4	None (eq. 2)
Buy and Hold	No	No	Yes	Yes	No	No	No
Value Weighted	No	No	No	Yes	No	No	No
Firm-Level GLS	No	No	No	No	No	Yes	No

Notes: The entries in columns 1-5 are the parameter estimate and heteroscedasticity-consistent standard error (in parentheses) on the constant from the estimation of versions of equation (3). Column 6 is similar to the estimates of equation (3), except that an observation is a firm-week and observations are weighted by the inverse of the standard deviation of a firm's return for the first twelve weeks of 1963. Column 7 is based on estimates of equation (2). The group is denoted in the bold-face panel headings and the specification details are reported at the bottom of the table. "IM 4-4" = Industry-Matched 4-4 Comparison Group. The sample size is 58 weeks, except in column 6 where it is 10,363 for group 0-4, 34,883 for group 2-4, 4,540 for group 0-0, and 3,842 for group 2-2.

Table 9

Average Abnormal Excess Returns

Periods 1 and 2, January 1963 – November 15, 1965

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
0-4							
$\alpha_{period\,1}$ (%)	0.073	0.111	0.148	0.097	0.124	0.138	0.208
	(0.051)	(0.049)	(0.052)	(0.047)	(0.051)	(0.041)	(0.054)
R-Squared	0.047	0.214	0.206	0.225	0.192	0.006	0.606
2-4							
$\alpha_{period\,1}$ (%)	-0.001	0.036	0.062	-0.087	0.053	0.069	0.125
	(0.042)	(0.042)	(0.044)	(0.130)	(0.040)	(0.039)	(0.051)
R-Squared	0.027	0.154	0.147	0.136	0.098	0.003	0.681
0-0							
$\alpha_{period\,1}$ (%)	-0.049	-0.054	-0.119	-0.094	0.004	-0.060	0.117
	(0.092)	(0.097)	(0.122)	(0.126)	(0.101)	(0.085)	(0.091)
R-Squared	0.019	0.072	0.043	0.085	0.091	0.002	0.359
2-2							
$\alpha_{period\,1}$ (%)	-0.115	-0.067	-0.038	-0.014	0.025	-0.090	0.104
	(0.107)	(0.110)	(0.115)	(0.139)	(0.112)	(0.101)	(0.114)
R-Squared	0.004	0.018	0.017	0.115	0.030	0.000	0.334
Factor Model	Market	4 Factors	4 Factors	4 Factors	4 Factors	4 Factors	4 Factors
Comparison Group	4-4	4-4	4-4	4-4	IM 4-4	4-4	None (eq. 2)
Buy and Hold	No	No	Yes	Yes	No	No	No
Value Weighted	No	No	No	Yes	No	No	No
Firm-Level GLS	No	No	No	No	No	Yes	No

Notes: The entries in columns 1-5 are the parameter estimates and heteroscedasticity-consistent standard errors (in parentheses) on the constant from the estimation of versions of equation (3). Column 6 is similar, except that an observation is a firm-week and observations are weighted by the inverse of the standard deviation of a firm's return for the first twelve weeks of 1963. Column 7 is based on estimates of equation (2). Bold-face panel headings denote groups and the specification details are at the bottom of the table. "IM 4-4" = Industry-Matched 4-4 Comparison Group. In all columns except (6), the sample size is 148, but it is based on 149 calendar weeks. Due to the lack of comparability between the OTC and NYSE/AMEX returns in the week of Kennedy's assassination, we drop prices from that week and treat the returns from the week before the assassination to the week after as a single observation. In column 6, the sample sizes are 30,046 for group 0-4, 99,701 for group 2-4, 15,477 for group 0-0, and 12,154 for group 2-2.

OTC Sample Firm Counts, 1963-1966

	Jan 63	Jan 64	Jan 65	Jan 66	Dec 66
Sample size	1182	1107	1028	959	911
(a) Move to NYSE/AMEX	86	82	62	37	
Continued	86	82	62	37	
(b) Name change	8	12	10	8	
Continued	4	7	5	5	
Not continued (ER assigned/not assigned)	4 (1/3)	5 (3/2)	5 (4/1)	3 (0/3)	
(c) Merger	23	27	31	19	
Continued (merger week return ass./not ass.)	13 (12/1)	23 (18/5)	17 (16/1)	10 (9/1)	
Not continued (merger week return ass./not ass.)	10 (8/2)	4 (4/0)	14 (9/5)	9 (8/1)	
(d) Liquidations	9	10	5	7	
Not continued (ER assigned/not assigned)	9 (6/3)	10 (4/6)	5 (4/1)	7 (6/1)	
(e) Exit from *Barron's*, last price> \$2	33	19	14	14	
Not continued (ER assigned/not assigned)	33 (29/4)	19 (14/5)	14 (10/4)	14 (12/2)	
(f) Exit from *Barron's*, last price≤ \$2	38	22	16	15	
Not continued (ER assigned/not assigned)	38 (32/6)	22 (19/3)	16 (13/3)	15 (11/4)	
(g) Discont. due to gap into next calendar year	7	1	0	0	
Not continued (ER assigned/not assigned)	7 (4/3)	1 (1/0)	1 (1/0)	0 (0/0)	
Total exits/changes	204	173	138	100	
Total series continued	103	112	84	52	

Note: "ER" stands for "exit return". Among the firms with discontinued time series of returns, "ER assigned" and "not assigned" refer to firms for which it was possible and impossible to assign exit returns within 20 weeks of the last Barron's price, respectively. Overall, we succeeded in assigning an exit return for 77.8% of the 324 firms where the time series of returns was not continued. The number of observations at the beginning of the following year does not exactly equal the number of observations at the beginning of the current year, minus the number of exits/changes, plus the number of series that are continued. This is because an exit return may only be assigned in the following calendar year. Series that are continued may again be subject to one of the changes in (a)-(f). Such changes are not included in the above counts. See the text and Data Appendix for further details.

Appendix Table 2. Four Factor Estimates by Portfolio and Period

	Pd 1	Pd 2	Pd 3	Pd 1	Pd 2	Pd 3
		0-4			2-4	
$\alpha(\%)$	0.202	0.215	0.077	0.129	0.119	0.066
	(0.077)	(0.075)	(0.085)	(0.082)	(0.058)	(0.072)
Market Factor Beta	0.617	0.779	0.868	0.730	0.850	0.842
	(0.081)	(0.093)	(0.063)	(0.082)	(0.081)	(0.057)
R-squared	0.490	0.705	0.901	0.580	0.790	0.938
		0-0			2-2	
$\alpha(\%)$	0.092	0.145	0.244	0.075	0.137	0.016
	(0.135)	(0.121)	(0.192)	(0.174)	(0.143)	(0.160)
Market Factor Beta	0.425	0.882	0.781	0.667	1.047	0.733
	(0.132)	(0.136)	(0.135)	(0.175)	(0.192)	(0.108)
R-squared	0.207	0.544	0.664	0.201	0.524	0.743
	4-4, size matched to 0-4			4-4, size matched to 2-4		
$\alpha(\%)$	0.101	0.094	0.088	0.091	0.086	0.089
	(0.043)	(0.043)	(0.054)	(0.040)	(0.041)	(0.050)
Market Factor Beta	0.812	0.930	0.988	0.822	0.938	0.993
	(0.045)	(0.066)	(0.041)	(0.042)	(0.061)	(0.037)
R-squared	0.862	0.907	0.973	0.881	0.916	0.975
	4-4, size matched to 0-0, 2-2					
$\alpha(\%)$	0.186	0.154	0.132			
	(0.075)	(0.080)	(0.090)			
Market Factor Beta	0.681	0.873	0.940			
	(0.077)	(0.125)	(0.062)			
R-squared	0.666	0.712	0.925			

Notes: The entries are the alphas, the betas on the market factor and heteroskedastic-consistent standard errors (in parentheses) from the estimation of equation (2) for each portfolio in each period. For brevity we do not include the factor loadings on the size, book/market and momentum factors. See the text for details.
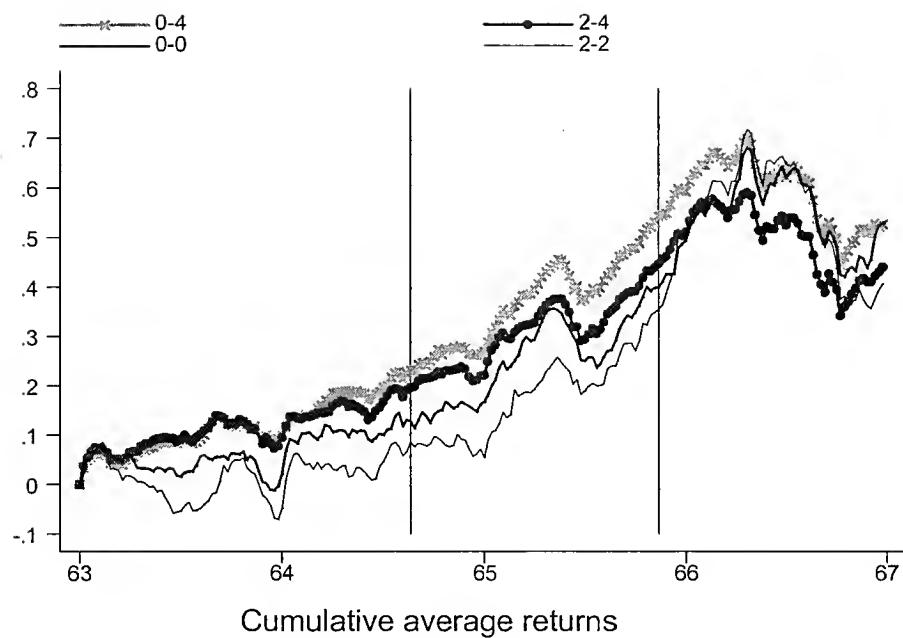
Figure 1a: Returns by group, 1963-1966
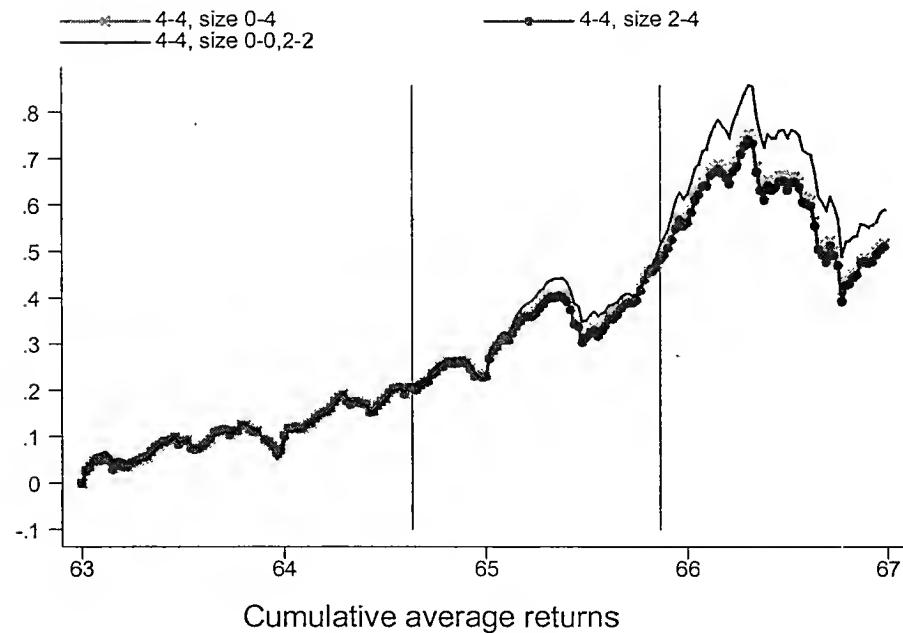
Figure 1b: Returns by group, 1963-1966

Note: Vertical lines in Figures 1-3 are at the ends of Period 1 and Period 2. See text for further details.

Figure 2a: Returns by group, 1963-1966


Figure 2b: Returns by group, 1963-1966


Figure 2c: Returns by group, 1963-1966

Cumulative abnormal average excess returns
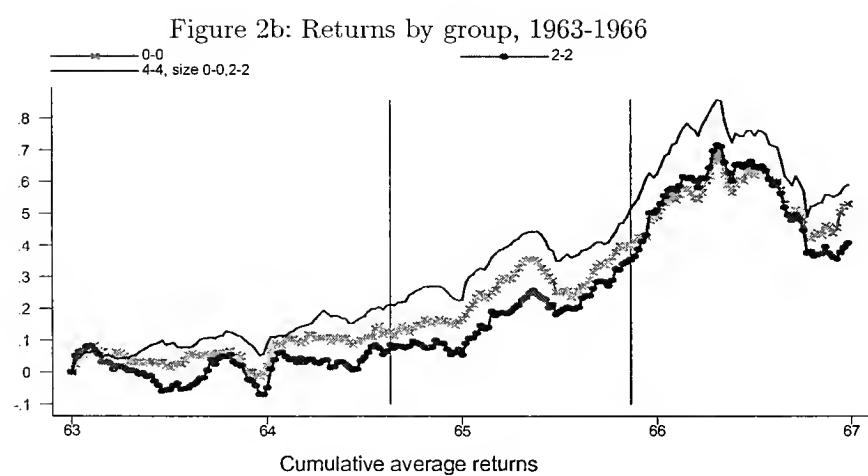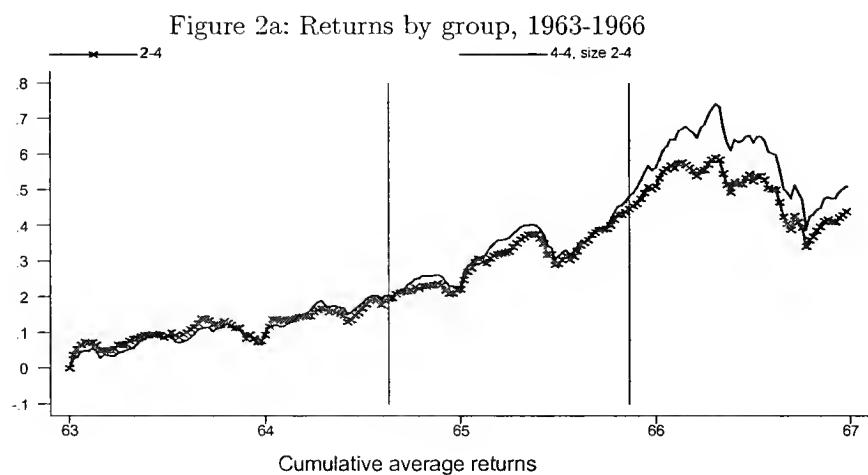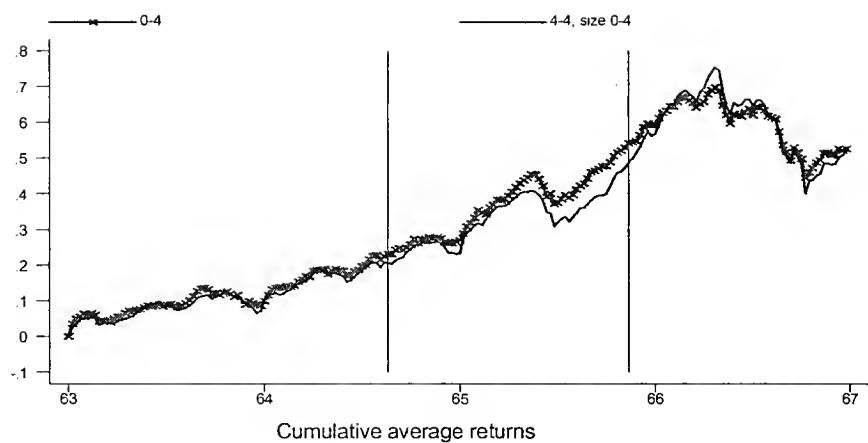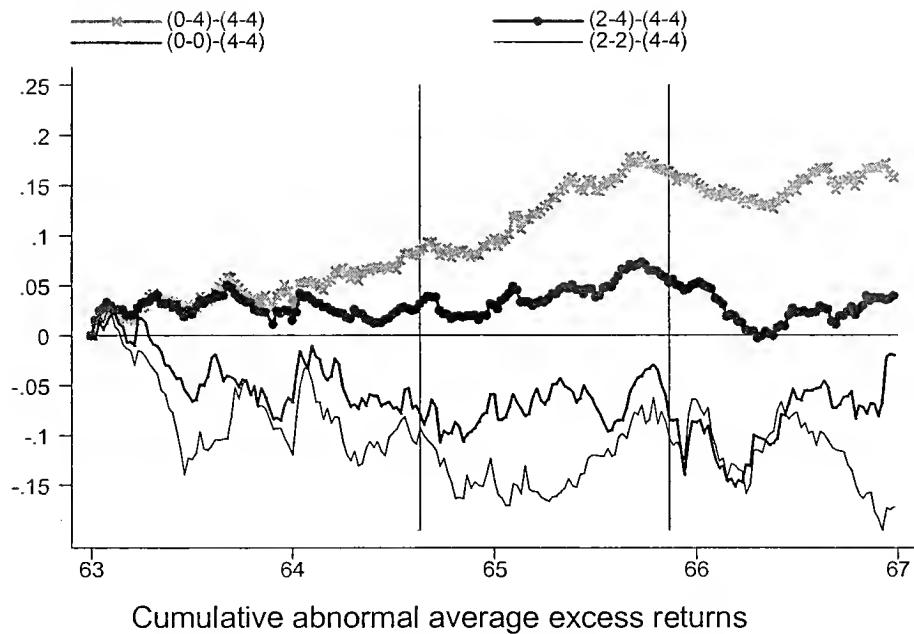
Figure 3: Abnormal excess returns

Cumulative abnormal average excess returns
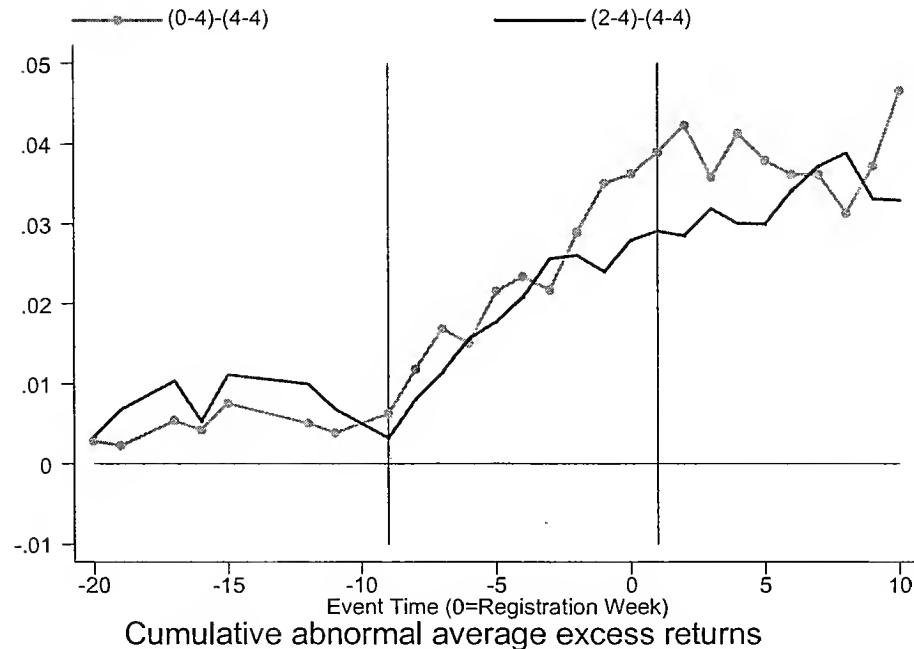
Figure 4: Abnormal excess returns near SEC registration

Date Due

Lib-26-67